Co-Chairperson: Jim McKenna, Port of Portland
Co-Chairperson: Bob Wyatt, NW Natural
Treasurer: Fred Wolf, Legacy Site Services for Arkema

November 19, 2007

Chip Humphrey
Eric Blischke
U.S. Environmental Protection Agency, Region 10
Oregon Operations Office
811 S.W. 6th Ave.
Portland, OR 97204

Subject: Portland Harbor RI/FS, Compilation of Information for Sources Between River Miles 11 and 11.6, East Bank of Portland Harbor

Dear Chip and Eric:

The Lower Willamette Group (LWG) remains concerned about EPA's intentions regarding potential contamination identified on the East bank of the Willamette River between River Miles 11 and 12. One particular concern is that the potential sources associated with the areas of sediment impact are not being adequately investigated consistent with sediment remediation guidance. We have compiled readily available source information associated with this area of the river for EPA and DEQ's consideration. We urge that the agencies promptly require these potential sources to conduct investigations pursuant to DEQ's source control program.

If concerns regarding sources at the East bank of the Willamette River between RM 11 and 12 are not to delay issuance of a Record of Decision in 2010 or implementation of the ROD, we believe that upland sources in this area need to be aggressively investigated for source control by the parties responsible for these sources.

Thank you for your consideration,

Jim McKenna, Co-Chair

Bob Wyatt, Co-Chair

cc: Jim Anderson, ODEQ
LWG Repository
LWG Legal

COMPILATION OF INFORMATION FOR SOURCES BETWEEN RIVER MILES 11 AND 11.6, EAST BANK OF PORTLAND HARBOR

RIVER MILES 11-11.6, EAST BANK

Area extending on the east side of the Willamette River from Essex Avenue south to 800 N. River Street, east to the Union Pacific Railroad tracks, and west to the river. Specific addresses of interest, from up to down river, include: 800 N. River Street (Cargill Inc.), 612 Tillamook (Westinghouse), 1050 N. River Street (Glacier NW/Lone Star), 2110 N. Lewis Street (Tucker Building), and 1303 N. River (Western Electric). In addition to the Tucker Building, Pacific Power and Light (PP&L) also operated or owned several properties between River Miles (RMs) 11 and 11.6, some of which they still own. Addresses for these PP&L properties have changed over time, so they have been identified based on City block numbers. PP& L block numbers include blocks 69-71 and 78-83. All of these properties of interest, located in the Eliot neighborhood of Portland, are identified on Figure 1.

Latitude/Longitude: A rectangle with corner bounding coordinates:

	X	Y
NE:	7644060.231354	691660.656828
NW:	7642791.26411	690595.866882
SE:	7646370.389658	688907.517369
SW:	7645101.422414	687842.727422

Township/Range/Section: T1N, R1E, S27

River Mile: 11.2 to 11.5 East bank

LWG Member ☐ Yes ☒ No

Upland Analytical Data Status: ☐ Electronic Data Available ☒ Hardcopies only

1. SUMMARY OF POTENTIAL CONTAMINANT TRANSPORT PATHWAYS TO THE RIVER

The current understanding of the transport mechanism of contaminants from the uplands portions of the east bank of Portland Harbor between RMs 11 and 11.6 to the river is summarized in this section and Table 1, and supported in following sections. As shown in Figure 1, this area of the river contains eleven properties of interest as well as the historical Albina Engine and Machine Works shipyard and repair operations.

1.1. Overland Transport

During the era of the Albina Engine and Machine Works shipyard (1904-1970s), the upland site drainage patterns were conducive for the migration of contaminants to the river through stormwater and/or sheet runoff. Potential contaminants found in overland sheet runoff were likely associated with sandblasting, metal plating and surface finishing, painting, fiberglass construction, and machining and metal working activities at the shipyard. These contaminants could have included VOCs, SVOCs, PCBs, PAHs, TPH, metals, cyanide, and butyltins (EPA 1997).

Currently, the potential for overland sheet runoff to occur on the Glacier NW and Cargill properties is lessened by the heavily vegetated river bank, which inhibits the movement of sheet runoff to the river.

1.2. Riverbank Erosion

Riverbank erosion was a potential pathway for contaminants to reach the river during the shipyard years, but riverbank conditions for this period are unknown. The source of the material used to fill the former shipways is also unknown. Figure 1 shows that the river bank currently ranges from 50 to 100 ft wide and is heavily vegetated. The vegetation is expected to help prevent erosion of the bank.

1.3. Groundwater

Very little is known about groundwater quality in this area. Groundwater has been investigated only at one property, the Tucker property, during a SI in 2001. The nature and extent of groundwater contamination beneath other industrial and non-industrial properties in this area is unknown.

Beneath the Tucker property, analytical data indicate that groundwater in this area is impacted with low levels of petroleum hydrocarbons, metals, VOCs, and PAHs. Gasoline and diesel hydrocarbons and VOCs were detected only in the upgradient sampling locations. PAHs were detected primarily onsite and downgradient. PCBs were not detected in the groundwater samples. PAHs appear to be migrating across the subject property toward the Willamette River, which is approximately 250 ft south-southwest of the site. URS (2003) compared groundwater PAH concentrations to DEQ Level II screening level values (SLVs) for aquatic biota exposure to surface water and found that only benzo(a)anthracene and benzo(a)pyrene exceeded their respective SLVs. However, URS concluded that these two constituents will likely not reach the river at the concentrations detected in downgradient samples because groundwater factors such as retardation, biodegradation, and adsorption will reduce concentrations over time as the groundwater migrates toward the Willamette River.

1.4. Direct Discharge (Overwater Activities and Stormwater/Wastewater Systems)

There are 12 known private and four public stormwater outfalls draining this area (see Section 5 for further information). Three outfalls are monitored under industrial stormwater NPDES permits. NPDES benchmarks for TSS, oil & grease, and zinc have been periodically exceeded in stormwater discharging from private outfalls WR-344, WR-345, and WR-341 at the Cargill facility. Outfalls WR-342 and WR-343 discharge drainage from an office roof. At the Glacier Northwest facility, all outfalls are active with the exception of WR-354 (unknown status). Active outfalls drain areas of industrial activity and non-contact cooling water (WR-353).

Transformer oil disposal practices at the Westinghouse property are suspected by DEQ to have contributed PCBs and other contaminants to the river via Outfall 43 (see Section 7), but this has not been substantiated. PP&L serviced electrical transformers at the Tucker property, and shallow soil under the site pavement at the Tucker property was found to contain detectable concentrations of PAHs, PCBs, TPH, and metals during construction of the Interstate Avenue on-ramp. The other PP&L properties generally show sewer ties in to the public system although it is not always clear how stormwater is connected to the sewers. Rain drains are associated with the substation properties.

During the era of the Albina Engine and Machine Works shipyard, stormwater runoff to the river may have included, among others, lead, zinc, copper, chromium, mercury and other heavy metals, grease and oil, abrasives, solvents, cutting fluids, organic compounds, organotins, resins, cyanide, and used paints. During this period there was an extensive amount of overwater and in-water work associated with the shipyard activities.

Current overwater activities are performed at Glacier NW and Cargill in the vicinity of the two large mooring docks. Cement and grain are transferred to and from ships and/or barges that are moored at the two docks. Current dock uses may result in releases of diesel, motor oils, or other contaminants to the river.

1.5. Relationship of Upland Sources to River Sediments

The distribution of sediment PCB concentrations indicates historical and/or current sources of PCBs in this area. The sources have not been firmly identified; however, there are several potential PCB sources in the uplands including the Tucker property (PP&L), Western Electric, other PP& L properties, and the Westinghouse site. PCBs may have been transported to the river from these sources via stormwater through public and private conveyance systems. The Albina shipyard is expected to be a historical source of PCBs; however, the limited number of samples in this area prevents a clear determination of the source(s) of PCBs found in river sediment.

The highest sediment PCB concentration detected in this area was in a 0- to 91-cm sediment core (7,100 ug/kg) collected offshore from Cargill and upstream of City Outfall 43, which suggests that PCBs may have historically entered the river from upstream sources or from Cargill's operations (via runoff or overwater operations). This area is upstream of the former Albina shipyard. PCBs were also detected in surface grabs (0 to 23 cm) offshore of the Glacier NW facility, with the highest concentration detected (5,900 ug/kg) closest to the former shipyard mooring dock.

Similar to PCBs, historical subsurface PAH results show elevated concentrations (84,200 ug/kg) in the nearshore at the Cargill facility, with concentrations decreasing downstream offshore from the Glacier NW facility. PAHs were detected in soils under the pavement of the Tucker property.

1.6. Sediment Transport

RM 11 to 12 is a relatively dynamic reach, especially in the channel where high bottom shear stresses are predicted during high flows. The exception to this pattern is the somewhat sheltered shoreward area along the east bank from about RM 11.2 to 11.7 where structures and a bend in the river appear to dampen flow rates. Surface sediment textures appear to be mostly sand-dominated and are consistent with predicted high bottom shear stress. Observed river bed elevation changes from 2002 to 2004, indicate that the reach is a mosaic of small no change and slightly erosional areas. The navigation channel is nearly bank-to-bank in this reach, the very narrow, off channel area along the west bank from RM 11 to 11.5 shows some small-scale deposition and slighter finer-grained surface textures. Large bed forms (e.g., sand waves) are evident in eastern portion of the channel on the bathymetry and bathymetric change maps indicating downstream bedload movement of sediments along the river bed. These bed forms could also be due or in part due to prop wash.

2. CSM SITE SUMMARY REVISIONS

Date of Last Revision: N/A

3. PROJECT STATUS

Of the eleven properties discussed here, only the Tucker property is included in the ESCI database.

Activity		Date(s)/Comments
PA/XPA	☐	
RI	☐	
FS	☐	
Interim Action/Source Control	☐	
ROD	☐	
RD/RA	☐	
NFA	☒	Conditional NFA, Tucker Building

DEQ Portland Harbor Site Ranking (Tier 1, 2, 3 or Not ranked): Not ranked

4. SITE OWNER HISTORY

Information in this section was obtained primarily from plumbing records on file with the City of Portland, Polk directories, Sanborn maps, Commission of Public Docks Industrial Facilities maps, and the Site Investigation Report prepared for the Tucker property. Additional information is provided in a technical memorandum from the City of Portland (Sanders 2007), which is attached.

Address	Facility	Owner/Occupant	Type of Operation	Years
800 N. River Street	CDL Pacific Grain (Cargill Inc.)	Cargill Inc.	Grain terminal	1997 - present
		Oregon Electric Const.	?	~2000
		Bunge Corporation	Grain terminal	1976 - 1979
		Peavey Co. Grain Elevator	Grain terminal	1970 to late 1970s
		Oregon Bonded Grain Warehouse	Grain terminal	~1940 - ~1960
		Interior Warehouse Co.	?	~1940 - ~1970
		Balfour-Guthrie Co.	Grain warehouse	~1924 - ~1960
		Irving Dock	Grain shipping	~1919 - ~1960
612 N. Tillamook	Westinghouse	City of Portland	Owner; parking, outdoor pipe storage	1996 to present
		Ebony Iron Works	Steel fabrication	1993 - 1998
		Thomas Tucker	Owner	1985- 1996
		PacWest Glass	?	? - 1996
		Tillamook Industrial Investors	Owner	1981- 1985
		Arcorp, Inc	?	? - 1981
		William Gilmore		1978- 1981

Address	Facility	Owner/Occupant	Type of Operation	Years
		Westinghouse	Electrical transformer repair	1943-1978
		Harris Ice Machine Works	Owner; production of refrigeration systems	<1930 - 1943
2110 N. Lewis/Block 83	Former Tucker Building	City of Portland	On-ramp to N. Interstate Ave.	2001 - present
		Tom Tucker	Owner	1991 to 2001
		First Incorporated (tenant)	Office furniture storage	1996 - 2001
		Cab-Tech (tenant)	Cabinet manufacturing	1996 - 2001
		Greenbeans (tenant)	Bean bag furniture manufacturer	2000 - 2001
		Cagoule Fleece (tenant)	Fleece clothing manufacturer	2000 - 2001
		Howling Wolfe(tenant)	Glass-blower, jewelry maker	2000 - 2001
		Plazm (tenant)	Graphic design firm	2000 - 2001
		Goe-Hex (tenant)	Hobby product manufacturer	1992 - 2001
		William Park (tenant)	artist	1993 - 2001
		Riverside Studios (tenant)	Photography studio	1992 - 2001
		Strong Photography (tenant)	Photography studio	2000 - 2001
		Magrath Sculpture (tenant)	Puppeteer workshop	2000 - 2001
		PP&L	Servicing and maintenance of electrical transformers and other electric equipment	~1950 - 1991
		Northwest Electric Co.	Transformer house on NE portion of property. See attached September 28, 2007 memorandum (Sanders 2007) for more details.	Early 1900s - 1940
		?	Electric supply store house	??
		Milbrandt Construction Company	?	? - 1948
		Northwest Sales Co.	Camp equipment	~1932
		?	Piano truck factory	~1908
1050 N. River St.)	Glacier Northwest	North end: Glacier Northwest/ Lone Star NW	Cement storage and distribution	1997 to present
		North end: Coast Marine Construction	Boat builder	mid-1970s to 1998

Address	Facility	Owner/Occupant	Type of Operation	Years
		South end: Glacier NW/Lone Star NW n	Cement storage and distribution	1987 to present
		Kaiser Cement and Gypsum Corp	Cement production	~1970 to 1987
		Permenente Cement Co.	Cement production	~1950 to 1970
		Santa Cruz Portland Cement	Cement production	1943 to ?
Blocks 70, 71, 80, 82. River lots 9-14 and 15-19		Albina Engine & Repair	Machine shop	1904 – 1970s
		Vinegar & Cider Works	Pickling	1924 - 1950
Blocks 69, 71, 78, 78, 80, 81, 82, 83	Pacific Power and Light (PP&L)	PP&L	Misc. electrical storage, including transformers. See attached September 28, 2007 memorandum (Sanders 2007) for more details.	1950 – 1980 Blocks 71,81 and 82: 1950 to present
1303 N. River	NW Copper Works	NW Copper Works	Custom metal fabrication	1951 to present
		Western Electric	Storage yard	1934(?) to ?

5. PROPERTY DESCRIPTION

The east bank area of Portland Harbor between RMs 11 and 11.6 is roughly bounded on the north by Essex Avenue, east by the rail lines, south by the southern boundary of Cargill's property, and west by the Willamette River (see Figure 1). An additional property of interest, the former Westinghouse facility, is located a few blocks east of the industrial area, beyond Interstate Avenue. There are two major riverside industrial facilities in this area (Cargill Irving Grain Elevator [Cargill] and Glacier Northwest's Portland Cement Terminal [Glacier NW]), one former electrical equipment service center (Tucker Building, ECSI #3036), a former electrical transformer repair facility (Westinghouse), former and current electrical warehouse, garages, and substations (PP&L) and a former Western Electric Co. storage yard (located at the current Northwest Copper Works facility). The general topography in this area slopes moderately to the southwest and towards the Willamette River (elevation approximately 5-10 ft MSL) (URS 2003). This area is zoned industrial.

Cargill Inc. (aka CDL/Pacific Grain), 800 N. River St.
This 6.2-acre facility extends roughly from RM 11.4 to 11.6. A large mooring pier is located offshore. The facility provides interim bulk storage for transfer of grain from trucks, rail cars and barges. Prominent development features on the site are reinforced concrete grain silos, conveyor systems, enclosed grain processing, a rail dump station, and a truck dump station. In addition to storage and transport of grains, a maintenance shop, various on-site hydraulic equipment, and small high voltage substations are known to exist at the site (BES Industrial Permits and CLD SWPCP 2001). Figure 1 shows that most of the site is covered by impervious surfaces, except for the riparian area along the bank.

According to City of Portland plumbing records (Attachment 1), stormwater runoff from an unknown portion of Cargill property was connected to the N. Albina Ave. storm sewer in July 2001. Stormwater maps from the City show that stormwater from this pipe system discharges to the river at City Outfall 43. Stormwater is also discharged through three private outfalls that are monitored under Cargill's NPDES permit. Outfalls WR-342 and WR-343 are roof drains from the office building. WR-345 drains a maintenance shop area, and WR-341, WR-344, and WR-346 drain the industrial activities and grain storage areas. All outfalls are active.

Information on the lease of riparian areas or submerged lands at the Cargill facility was not found.

Westinghouse, 612 N. Tillamook

The former Westinghouse facility is located at RM 11.4, southeast of Interstate Ave and about 800 ft east from the riverside industrial area discussed here. The 0.8-acre site is composed of the Westinghouse brick building and an asphalt parking lot. The site is covered by impervious surfaces. Based on the Polk Directory, it appears that Westinghouse also operated at two additional sites (690 and 720 N. Thompson Street) in the 1940s. These sites are listed as a Warehouse and a Service Department. No additional information was found for these sites.

The earliest plumbing record indicating a connection of the site to the public conveyance system was in 1924. According to a 1969 plumbing inspection record (Attachment 2), the Westinghouse yard on Tillamook Street contained(s) three catch basins. Stormwater from this site is routed to the public storm sewer that drains into the Willamette River at Outfall 43.

Tucker Building, 2110 N. Lewis Street (ECSI #3036)

PP&L (and its predecessor Northwest Electric Co.) serviced electrical transformers and other equipment at the former Tucker building site from at least the 1910s to about 1991. The Tucker building has been replaced by a new on-ramp to Interstate Avenue. Portions of the site not occupied by the on-ramp are paved or landscaped.

The earliest plumbing record for the site is 1913, and indicates a connection to the N. Albina Ave. storm sewer, which drained to City Outfall 43. As part of the on-ramp construction, most of the site stormwater was redirected to City Outfall 44, and stormwater treatment facilities were constructed to treat both the Tucker site property and other portions of the outfall basin. As shown in Attachment 3, a portion of the paved area of the site and some of the on-ramp drainage continue to drain to Outfall 43.

Glacier NW (formerly known as Lone Star NW), 1050 N. River St.

This 5.7-acre facility extends from RM 11.1 to 11.3 and is located between N. River St. and the river. It includes a large mooring dock, a monolithic dome, shops and warehouses, aboveground storage tanks, a main office, and a large parking lot. Figure 1 shows that most of the site is covered by impervious surfaces, except for the riparian area along the bank. Plumbing records from 1976 (Attachment 4) note that roof runoff from two buildings drains to the river through two outfalls. A second-story addition was added to the office in 1979 and the roof runoff to the river was maintained. Currently, all outfalls are active with the exception of WR-354 (unknown status). WR-350, WR-351, and WR-352 are associated with the catch basin system draining the industrial activity area through a stormceptor. WR-353 drains non-contact cooling water.

Information on the lease of riparian areas or submerged lands for the Glacier NW facility was not found.

PP&L

PP&L operated or owned a number of properties on seven different blocks in the east bank area of Portland Harbor between RMs 11 and 11.6. Based on a review of Polk Directory listings and Sanborn maps, PP&L occupied the majority of its properties in this area between 1950 and 1980. County tax assessor records show PP&L currently owns blocks 71, 81, and 82 (see Figure 1). Properties are situated one to two blocks from the waterfront between the Freemont Bridge and Interstate Avenue. The majority of the properties were covered by buildings or pavement since 1950; however, blocks associated with the construction department (Block 80) and transformers (Blocks 71, 81 and 82) show pavement or dirt/vegetation in historical aerial photos.

Historical plumbing records are as follows:

- **Blocks 69, 71:** No plumbing information is available. However, a 1985 TV survey of the storm line along N. Harding between Railroad Avenue (now "Unnamed Road") and N. Loring Ave. shows a lateral connected to the Block 71 property. Its current status is unknown.
- **Blocks 78 and 79:** Plumbing records indicate connections between rain drains and a storm inlet associated with new electrical storage and a warehouse in 1958. Rain drains were replaced in 1980 for a new structure noted as the "construction building".
- **Block 80:** A capping sewer at the warehouse is noted in plumbing records in 1964 and 1966.
- **Blocks 81 & 82:** A 1949 plumbing record for a new control house shows rain drain connections for the substation.
- **Block 83:** A catch basin with connection to a "city collector" is noted for a storeroom.

Northwest Copper Works, 1303 N. River

This 1-acre facility (where Western Electric was formally located) is located north of the Freemont Bridge approximately 300 ft upland from the river at RM 11. Site buildings are used for fabrication, office space, and a maintenance shop. Outside areas are used for storage of site materials, ASTs, and scrap dumpsters. Most of the site appears to be covered by impervious surfaces.

Plumbing records from 1952 (Attachment 5) note the presence of four rain drains for a new one-story factory building. There are also branch connections to the sewer line in N. Essex in 1951 and 1952 to the combined system. Additional roof drains noted in records from 1967 and 1970. A new one-story office was constructed in 1979 with one roof drain noted. The site currently drains to Outfall 45, but may have also drained to Outfall 44A before 1954, when the combined system in this area was separated.

6. CURRENT SITE USE

Generally, this section of the river (i.e., the east bank between RMs 11 and 11.6) is dominated by river- and rail-supported industry. Discussed below are the major industries and the current status of other properties of interest.

Cargill Inc.

Cargill Irving Grain Elevator has been active since the early 1970s, receiving grain and field beans by rail and shipping these commodities to global markets. There are five shipping bins connected to a single enclosed export conveyor with five vessel loading spouts (USDA 2002). The grain elevator has a storage capacity of 1.386 million bushels, and a loading capacity of 50,000 bushels. A locomotive is located onsite as well as a maintenance shop, hydraulic equipment, a small high-voltage substation, and a power room (adjacent to the maintenance shop). A 10,000-gallon aboveground storage tank, containing mineral oil for dust suppression activities, is also located onsite (Sanders 2006, pers. comm.). The mineral oil is sprayed on conveyers to suppress dust in accordance with an air quality permit.

Cargill is a conditionally exempt hazardous waste generator. Two hazardous waste permits are associated with this site: ORQ000008235 (CDL Pacific Grain), and ORD07640524 (USDA Federal Grain Inspection Service). Cargill operates under a standard air containment discharge permit (ACDP), which was issued on 2/19/03 and will be up for review on 7/1/08. The facility is currently in compliance with this permit based on an inspection (DEQ 2007).

Westinghouse
This property was purchased by the City of Portland Bureau of Water Works in 1996, and is used for outside storage of pipes and parking. The facility is surrounded by a fence. The City notes that the interior of the building has had elevated PCB contamination.

The Portland Water Bureau plans to remove the old Westinghouse Building in fall 2007. In the near-term, this site will be paved and used for storage and parking.

Tucker Building
This property was purchased by the City of Portland Office of Transportation in 2001. The site is currently used for the on-ramp to Interstate Avenue that was constructed in 2001/2002 (DEQ 2007).

Glacier NW
Glacier NW operates the Portland Cement Terminal at RM 11.2-11.3, which is one of four Glacier NW cement terminals in the Pacific Northwest. Dry bulk powdered cement, usually originating from Asia on cargo ships, is moved by compressed air into a Monolithic Dome where it is stored under moisture-proof conditions. Completed in 1995, the Monolithic Dome, measuring 141 feet in diameter and 74 feet high, is a conspicuous presence on the site (Grones 1998). The facility produces Type I-II and Type III cement. From there, the cement is distributed throughout the entire Pacific Northwest, British Columbia and Alaska (http://www.glaciernw.com/dept.asp?d_id=15247).

PP&L
Current site use information is somewhat limited for the current and former PP&L properties. The following information is available in the Multnomah Tax Assessor's Records and current aerial photos.

- **Block 69 (7-8):** Ostrom Glass and Metal - warehouse space.
- **Block 69 (3-4):** Unkeles Family - warehouse multi-story storage.
- **Blocks 71, 81 and 82:** PP&L - A transformer stand is present on Block 71. Block 81 is identified as a substation. A portion of Block 82 appears to contain transformer stands as shown in recent aerial photos.
- **Blocks 78 and 79:** Downtown Recycling - shop and garage space.
- **Block 80:** ALTCO Building LLC - warehouse and showroom.

Northwest Copper Works
The site is a custom fabrication shop for pressure vessels and pipe fittings made from steel and titanium alloys. Most of the site's covered space is for fabrication. There is outside storage under the Fremont Bridge, across N. Loring Street on gravel, and in a central court yard that opens out onto N River Street. This central area is where the ASTs are (diesel & gas) and where the office and maintenance shop are. Scrap dumpsters are also stored outside under the bridge near N. River Street (www.nwcopper.com) (http://www.wahchang.com/pages/outlook/html/bkissues/02_01.htm).

7. SITE USE HISTORY

Albina Engine and Machine Works

The riverside area where Glacier NW is currently located (plus adjacent non-riparian properties) was the site of the former Albina Engine and Machine Works property where ship construction and repair was conducted, including for the U.S. Navy and the War Shipping Administration (see Figure 1). Albina Engine and Machine Works was founded in 1904 as a repair yard. According to a 1919 Commission of Public Docks Industrial Facilities map, the repair yard expanded to include river lots 9-14 and 15-19 as well as blocks 70, 71, 81, and 82. During WWII, the shipyard facility was expanded again to encompass 16.8 acres and included six shipways, welding and pipe shops, paint storage and shops, warehouses, two outfitting docks, plate storage yards, burning slabs, and a pickling plant (see Albina Site Features photo, NARA 1943). Thirteen shipbuilding contracts were undertaken for the Navy, including the construction of submarine chasers, landing craft and support ships, fuel oil and gasoline barges, and degaussing vessels. According to a *Time* magazine article from 1943, the shipyard employed approximately 4,500 workers (*Time* 1943). A total of 117 vessels were constructed from 1941 until the end of the war. During a 1945 Naval inspection of the property, solvent control standards were observed to be out of compliance. Following the war, approximately 163 vessels were constructed, repaired, or retrofitted up until the facility closed in the 1980s (http://www.coltoncompany.com/shipbldg/ussbldrs/postwwii/shipyards/inactive/pacific/albina.htm).

Based on a review of aerial photos by Integral, filling of the shipways began in the 1950s, and was completed by 1963. Most of the riverside buildings associated with the shipyard were demolished. The first new buildings on the former shipyard property appeared in the late 1970s. Various facilities have occupied the riverfront lots. Additional information is provided in the attached memorandum (Sanders 2007).

Glacier NW

Coast Marine Construction, a boat builder, occupied the north end of Glacier NW site after conversion from the Albina Engine and Machine Works (mid-1970s). Glacier NW occupied this part of the site beginning in 1997 under the name of Lone Star Sand and Gravel. The south end of the property was occupied by Santa Cruz Portland Cement Co. (by 1934), Permenente Cement Co. (by 1950), Kaiser Cement & Gypsum Corp. (by 1970), and finally Lone Star NW (by 1987).

Cargill Inc.

The site has been active as a grain elevator and terminal since the early 1900s. Cargill also had a maintenance shop, various onsite hydraulic equipment, and small high voltage substations, all which could be PCB sources. Various companies have operated at the site over this time.

Westinghouse

The earliest recorded site operation was Harris Ice Machine Works, which produced ammonia refrigeration systems, including compressors, evaporators, condensers, chillers, cold boxes and controls.

Westinghouse operated at the site from 1943 to 1978. This former electrical transformer repair facility came to the attention of DEQ in a September 1988 letter in which a former worker reported possible PCB contamination of the storm drain system (Attachment 6). The worker did some repair and remodeling work in the warehouse where electrical transformers were stored (no date provided). The letter noted “at the time he was working in the warehouse, there was a large sump in the middle of the floor that oil from the transformers was poured.”

A private citizen also contacted DEQ in June 2002 (Attachment 7). This citizen worked for Westinghouse R&D in the early 1970s and participated in a corporate study of the company’s PCB handling practices and potential environmental consequences. He later testified in early Congressional hearings about the environmental significance of PCBs (early to mid-1970s). According to the former employee, in the early 1970s, Westinghouse considered transformer fluids no different (no more toxic) than waste oil and would have used the fluids in the same manner that waste oil was typically used at that time (dust suppression, burner fuel, etc.). The former employee noted that PCBs had been found in Willamette River sediments downstream from the Broadway Bridge, and postulated that this Westinghouse facility could be a potential source of that contamination. DEQ indicated that stormwater sewers from this property feed Outfall 43, which discharges to the river at the downstream end of Cargill's grain elevator property (Fortuna 2002a, pers. comm.).

In December 2002, the former employee provided DEQ with a set of Monsanto documents that show sales of PCB-containing products to Westinghouse Electric facilities from 1971-1975 (Attachment 8). Of the three facilities where PCB-containing products were delivered in Oregon, one of the facilities was the repair shop on Tillamook. The last communication in DEQ files (Fortuna 2002b, pers. comm.) was a request to wait for more site-specific information to substantiate the information provided by the former employee. DEQ files note that the property was added to ECSI (#4497) on 8/18/05, but this ECSI number is not valid at the time of this report.

The DEQ file also contained a letter from Westinghouse in response to a PCB survey that DEQ performed of the property in January 1976 (Attachment 9). Westinghouse noted in the letter that an NPDES permit application and a map showing where PCBs were handled and stored onsite was attached (not included in DEQ files). Westinghouse noted that PCBs are handled according to a SPCCP, and liquid and solid wastes were disposed of through EPA-approved disposition service companies.

A Sanborn fire insurance map from 1950 indicates that warehouse buildings occupied 90 percent of the site, except for a small outdoor storage area at the southwest corner of the site and a 12-ft access road from the storage area to Tillamook St. Aerial photos viewed by DEQ showed that 40 percent of the original warehouse structures have been removed, and the site is now covered with buildings or an asphalt parking lot (Fortuna 2002a, pers. comm.).

The City of Portland purchased the property in 1996 for future expansion of its Bureau of Water Works Interstate Field Operations Center. At the time of purchase, portions of the site were not paved. The City removed an existing garage from the site and in fall 1999 and paved the site. The paved portion of the site has been used for outside pipe storage and parking. The main warehouse is planned to be demolished. After the building is removed, the rest of the site will be paved except for constructed swales that will be used to treat stormwater from the site. Future short-term use of the site will continue to be for material storage and parking. The Master Plan for the Interstate facility, including future use of the Westinghouse property, is currently being updated.

<u>Tucker Building (ESCI #3036)</u>

Various electrical operations have operated at this property, including Northwest Electric Company, Pacific Power & Light, and Pacific Gas & Electric. Early in the 1900s, this site was used by Northwest Electric Company. There is a 1913 City plumbing record showing a connection for a 4-story building for a new substation and in 1926, building plans were submitted to the City for a new warehouse at this location (based on a 1926 plumbing record, this was a 2-story warehouse). During the WWII shipyard era, the Tucker property was mostly surrounded by shipyard facilities.

The two-story warehouse with a basement has been used by a variety of tenants (see Section 4) since 1992. Contamination on this property was discovered during redevelopment activities associated with the construction of an on-ramp to Interstate Avenue in 2001/2002. The property covered an entire city block and included a two-story warehouse (with basement) on half of the property and an asphalt-covered parking lot on the other half. According to a 1924 Sanborn map reviewed by Integral, the warehouse was occupied by a retail and business office (Northwest Sales Co. Camp Equipment); the paved portion of the site was used for a Northwest Electric Transformer area (labeled as built in 1913) and an Electric Supplies Storehouse. PP&L used the facility to service and maintain electrical transformers and other electric equipment until 1991. The 1950 Sanborn map shows PP&L using the warehouse area, including repair shop and open air transfer station, on the property; the Northwest Electric Transformer area is still shown in the northeast corner of the site. There is one plumbing record associated with PG&E in 1968.

During the building demolition and on-ramp construction, soil and building materials (concrete) were found to contain petroleum, PAH, and PCB contamination. URS (2003) performed a screening level risk assessment to evaluate the likelihood of adverse effects occurring in human and ecological receptors potentially exposed to chemicals at the site. Concentrations of petroleum, PAH, and PCBs were found to exceed human health risk screening levels for workers exposed to soil. No unacceptable ecological risks were noted during the screening evaluation. Site groundwater was not found to be significantly impacted by these contaminants. Approximately 650 tons of petroleum-impacted soil were removed from the on-ramp footing excavations and disposed of at the Hillsboro Landfill. PCB-contaminated concrete that exceeded the federal PCB cleanup level of 25 ppm in the building floors was also removed and disposed of at the Hillsboro Landfill. Remaining concrete and building materials with PCB concentrations below 25 ppm were crushed and placed in the building basement before covering with clean fill soil (DEQ 2007).

The new on-ramp, and surrounding landscaping and pavement, now cover the property and if left in place mitigate future potential direct contact risks. An Easement and Equitable Servitude deed restriction was placed on the property in July 2004. DEQ issued an NFA (on the condition that the on-ramp remain in place) for the site in August 2004. In October 2005, the site was placed on the Confirmed Release List (DEQ 2007).

PP&L

Site use history information for properties currently or formerly occupied by PP&L is limited to the Polk Directory, Sanborn maps, aerial photos, and plumbing records.

- **Block 69 (3-4, 8-9):** The same two buildings appear to occupy this site since 1936. Albina Station is indicated at 901 N. Loring (Block 69, 3-4) between 1960 and 1970. The building at 2170 N. Lewis (Block 69, 8-9) was used as a garage between 1950 and 1980.
- **Block 71:** This property has been occupied by transformers since the 1960s. Albina Engine and Machine Works expanded their operations to include this lot for an unspecified amount of time around 1919.
- **Blocks 78 and 79:** The earliest information for this block indicates PP&L used this site for their construction department. New buildings were constructed in the 1960s and in 1971.
- **Block 80:** The earliest information for this block indicates PP&L occupied the site since approximately 1950. The construction department was located here with large warehouse space. Structures were demolished in the late 1960s/early 1970s and a large warehouse that occupies the entire block was built in its place.
- **Blocks 81 and 82:** Albina Engine and Machine Works expanded their operations to include Blocks 81 and 82 around 1919. Blocks 81 and 82 have been used as a substation since the early 1960s. New buildings were built at north and east ends of Block 81 by 1975. Buildings present on Block 82 in the 1940s aerial photos were removed by the 1960s, but a new building was built along with transformers. A 1975 aerial shows a larger array of transformers with the same building in place.
- **Block 83/Tucker Building:** Northwestern Electric Co. occupied this site in the early 1900s prior to PP&L. This block was occupied by PP&L between approximately 1950 and 1991 and served as PP&L's district office, storage, and warehouse space. See the Tucker Building historical site use discussion.

Northwest Copper Works

Based on City of Portland plumbing records, Northwest Copper Works has operated on this site since about 1951. It appears that this facility operated in the general area prior to moving to this site; a 1950 Sanborn map and the 1950 Polk Directory show that this company operated at 2321 N. Randolph.

On a Commission of Public Docks Industrial Facilities map (dated 1934) reviewed by Integral, the Western Electric Company storage yard encompassed about half of the city block and consisted of a garage, an office, and a shed. On 1924 and 1950 Sanborn maps,Western Electric appears to be part of the Albina yard and possibly supported the operations there. No further historical information was found for this site.

8. CURRENT AND HISTORIC SOURCES AND COPCS

The understanding of historic and current potential upland and overwater sources at the east bank of Portland Harbor between RMs 11 and 11.6 is summarized in Table 1. The following sections provide a brief overview of the potential sources and COPCs at the site requiring additional discussion.

8.1. Uplands

Historical. This area has a long history of heavy industrial use. Shipbuilding and repair operations are likely historical sources of COPCs in the river, but specific sources or pathways for in-water impacts are obscured due to significant changes in land configuration and land use since the shipbuilding era.

Based on studies of WWII-era shipyards conducted by EPA (1997), discharges of hazardous substances to the surface waters and sediments were likely to have included, among others, lead, zinc, copper, chromium, mercury and other heavy metals, grease and oil, abrasives, solvents, cutting fluids, organic compounds, organotins, resins, cyanide, and used paints. Typical waste streams associated with these processes included air emissions, wastewater, residual wastes, sanitary sewer wastes, and stormwater runoff. As evidence of these potential discharges, during a 1945 Naval inspection of the Albina shipyard property, solvent control standards were observed to be out of compliance (NARA no date).

The outfalls and drainage basins for the shipbuilding and repair era have not been evaluated, but based on other shipyards in the area (e.g., the Oregon Shipbuilding Corporation’s shipyards), most likely there were separate stormwater drainage and sanitary sewer systems consisting of multiple outfalls that discharged directly to the Willamette (Bridgewater 2000). Potential contaminants found in stormwater, sanitary sewer, and overland sheet runoff were likely associated with sandblasting, metal plating and surface finishing, painting, fiberglass construction, and machining and metal working activities at the shipyard. These could have included VOCs, SVOCs, PCBs, PAHs, TPH, metals, cyanide, and butyltins.

Stormwater from the Tucker, Westinghouse, PP&L, and Western Electric (aka Northwest Copper Works) properties discharged though public outfalls in this area. Any surficial contamination from spills or dust suppression operations could have become entrained in the stormwater runoff.

Current. The east bank of Portland Harbor between RMs 11 and 11.6 consists of light industrial businesses and warehouses, a cement storage and distribution area, and a grain elevator storage area. At the Glacier NW site, cement is off-loaded from ships and conveyed under pressure into the Monolithic Dome where it is stored in climate-controlled conditions. The dome was constructed in 1995, and information on cement handling prior to that time is unavailable. Cement powder is composed of alumina, silica, limestone, and metallic oxides. Cement handling operations can produce a variety of solid process wastes, air emissions, and wastewater streams, but most of its contaminants are released in cement kiln dust (CKD). When water comes into contact with CKD, high pH leachate containing heavy metals, such as arsenic, copper, mercury, chromium, lead, zinc, can be produced and impact surface waters (http://www.envirotools.org/factsheets/community/update4.shtm). CKD can also contain dioxin/furans and radionuclides. However, it is not known if CKD was produced during cement handling operations at this site prior to the construction of the dome.

Particulate matter is the main contaminant of concern at grain-handling facilities. At Cargill, mineral oil is currently used to control particulate matter; however, historical dust suppression techniques for waste product and human consumption products at this facility are unknown. According to EPA's *Compilation of Air Pollutant Emission Factors*, grain dust emitted from grain elevator operations is composed of about 70 percent organic matter and may contain particles of grain kernels, molds, insect debris, pollens, and field dust. Historically, these dusts have posed explosion hazards in grain-handling facilities, but housekeeping practices have sharply reduced the possibility of explosions (http://www.epa.gov/ttn/chief/ap42/ch09).

In addition to grain-handling operations, Cargill also had a maintenance shop, various onsite hydraulic equipment, and small high voltage substations at the site, all of which could be PCB sources.

8.2. Overwater Activities

☒ **Yes** ☐ **No**

Historical: Extensive overwater activities have occurred along the east bank of Portland Harbor between RMs 11 and 11.6. After ships were assembled in the Albina shipways, they were moored at the Albina dock for outfitting. This usually included installing interior mechanical and electrical features and deck painting. Incidental spills of paint residue and fuels into the slip were possible during this time. Repair activities at Albina prior to the shipyard era possibly contributed incidental spills to the river during this time period. Bilge water (often containing oily residue) was likely discharged from the grain ships as well as other ships that moored in this area in the early 1900s. Other historical riverfront activities included sand and gravel storage, asphalt manufacturing, general cargo handling, grain shipping, and cement manufacturing. **Current:** Cement and grain are transferred to and from ships and/or barges that are moored at the two docks. Current dock uses may result in inadvertent releases of diesel, motor oils, or other contaminants to the river.

8.3. Spills

Known or documented spills in this stretch of the river were obtained either from DEQ's Emergency Response Information System (ERIS) database for the period of 1995 to 2004, from oil and chemical spills recorded from 1982 to 2003 by the U.S. Coast Guard and the National Response Center's centralized federal database [see Appendix E of the Portland Harbor Work Plan (Integral et al. 2004)], from facility-specific technical reports, or from DEQ correspondence. These spills are summarized below.

Facility	Date	Material(s) Released	Volume Spilled (gallons)	Spill Surface (gravel, asphalt, sewer)	Action Taken (yes /no)
Cargill	12/29/03	Food-grade white mineral oil	100	asphalt	Yes

City of Portland industrial stormwater files contain information about an additional documented release of acid waste from the Northwest Copper Works site that spilled into a street catch basin in August 1972. Sampling at the outfall demonstrated that this material reached the river. The amount of the release was unknown but sampling results showed extremely low pH and high concentrations of copper, nickel, and iron.

9. PHYSICAL SITE SETTING

Information on the geologic and hydrogeologic setting for this area was obtained from the site investigation (SI) performed for the Tucker property (URS 2003).

9.1. Geology

This area lies within the Portland Basin, which is an elliptical northwest-trending basin about 20 miles wide and 45 miles wide. The Portland Hills, located across the river from this area, form the southwestern boundary of the basin. The basin is composed of Miocene and recent sedimentary deposits. The geologic units of interest include surficial fill deposits, recent and Pleistocene alluvial deposits (Willamette River and catastrophic flood deposits), and the Troutdale Formation (URS 2003).

Site-specific data from the Tucker property indicate the presence of gravel fill underlain by silts and occasional clays of alluvial origin to a depth of approximately 29 ft below ground surface (bgs). Below the silt zone is a well-graded, very dense, water-bearing alluvial gravel deposit (CH2M Hill 2001). The western half of the site is filled with concrete rubble from the building demolition and clean, imported fill to a depth of 10 ft bgs (URS 2003).

A potentially important factor in evaluating contaminant source areas are identification of locations where nearshore fill was placed prior to construction of docks, buildings and other infrastructure. The location of these fill areas and origin of the material has not been identified.

9.2. Hydrogeology

The east bank of Portland Harbor between RMs 11 and 11.6 overlies an unconfined sedimentary aquifer that consists of Pleistocene-aged alluvium deposits. Groundwater flow direction is generally toward the river; however, this will vary locally depending on site conditions. Depth to groundwater varies seasonally and with changes in infiltration rates in the upgradient areas. URS (2003) indicated that tidal influence affects the stage of the Willamette River in this area, which in turn influences groundwater levels. During the groundwater investigation of the Tucker property in September 2002, the groundwater was about 18 to 25 ft bgs. In April and May 1998, CH2M Hill measured static groundwater levels in a piezometer at 18 to 25 bgs. The groundwater flow direction in the unconsolidated formation is anticipated to follow the topography and move in a southwesterly direction towards the Willamette River (URS 2003).

During the site investigation of the Tucker property in 2002, a thin saturated zone was observed approximately 8 to 10 ft bgs. Attempts to obtain groundwater samples from this zone were unsuccessful. The water table was encountered at approximately 25 to 26 ft bgs.

10. NATURE AND EXTENT *(Current Understanding)*

The current understanding of the nature and extent of contamination for the uplands portions of the east bank of Portland Harbor between RMs 11 and 11.5 is based only on the SI performed for the Tucker property in 2002.

10.1.Soil

Upland Soil Investigations ☒ Yes ☐ No

Soil investigations have only been performed on the Tucker property. Soil on the former Tucker property was investigated during several site assessments over the past 11 years, prior to the construction of the on-ramp. These investigations are briefly described below:

- **1991 PEMCO:** Associated with the removal of three underground storage tanks (USTs—gasoline, diesel and kerosene). The locations of the former USTs are unknown.

- **1998 CH2M Hill:** Single soil boring; discrete and composite soil samples collected from depth of 4.5 to 10.5 ft bgs. Low levels of PAHs and metals detected.

- **2001 City of Portland:** Three soil borings completed to depth of 6 to 7 ft bgs. Petroleum hydrocarbons and PCBs were not detected above reporting limits.

- **2001 HJE&A:** Soil was sampled from the excavation for two bridge footings. Samples collected from a depth of 3 ft bgs, and diesel- and oil-range TPH were detected. No PCBs were detected. A 150-gallon UST was encountered during trenching activities to install a sanitary sewer line. TPH was not detected in soil samples collected in the excavation. However, two piles of excavated soil were sampled, and diesel- and oil-range TPH and PCBs were detected. Lead and mercury were detected at levels above natural background conditions for the area. VOCs were not detected (HJE&A 2002, not seen, as cited in URS 2003).

- **2002 URS:** Forty-seven samples were collected during the SI from 30 direct-push borings. Low to moderate levels of diesel hydrocarbons, oil hydrocarbons, lead, mercury, PCBs, and PAHs were detected in shallow soil samples (0 to 0.5 ft bgs). PCB Aroclors 1248, 1254, and 1260 were detected; only one sample (1,052 ug/kg) from the soil stockpile generated from the bridge footing excavation exceeded the PRG screening level of 1,000 ug/kg for industrial sites (Hahn and Associates 2001). No VOCs were detected during the SI. The source of the soil impacts is unknown. Historically, this site has been paved with asphalt. Concentrations detected during the SI are provided in the table below (URS 2003).

Analyte	Minimum Concentration	Maximum Concentration
Total Petroleum Hydrocarbons (TPH)(mg/kg)		
Gasoline-range	<20	<20
Diesel-range	<50	438
Heavy oil-range	<100	612
Polycyclic Aromatic Hydrocarbons (PAHs)(ug/kg)		
Napthalene	0.01U	0.0711
Acenapthene	0.01U	0.0964
Fluorene	0.01U	0.115
Phenanthrene	0.01U	1.21
Anthracene	0.01U	0.221
Fluoranthene	0.01U	1.32
Pyrene	0.01U	1.98

Analyte	Minimum Concentration	Maximum Concentration
Benzo(a)anthracene	0.01U	1.04
Chrysene	0.01U	1.40
Benzo(b)fluoranthe	0.01U	0.723
Benzo(k)fluoranthene	0.01U	0.620
Benzo(a)pyrene	0.01U	0.932
Dibenzo(a,h(anthracene	0.01U	0.185
Indeno(1,2,3-cd)pyrene	0.01U	0.393
Benzo(g,h,i)perylene	0.01U	0.533
Metals(mg/kg)		
Lead	6.8	320J
Mercury	0.0893U	0.406
Polychlorinated Biphenyls (PCBs)(ug/kg)		
Aroclor 1260	67U	626
Aroclor 1254	67U	123
Aroclor 1248	67U	303

mg/kg = milligrams per kilogram (ppm)
ug/kg = micrograms per kilogram (ppb))

Riverbank Samples ☐ Yes ☒ No

Summary

The nature and extent of soil contamination beneath most industrial properties in this area is unknown. Soil investigations have been performed only on the Tucker property. Shallow soil and concrete demolition debris were found to contain detectable concentrations of PAHs, TPH, PCBs, and metals. Some of the shallow soil was excavated for construction of bridge footings; this soil was disposed of offsite. Prior to excavation activities, this soil was covered by asphalt pavement. The remaining shallow soil has been covered by pavement both before and after on-ramp development activities.

10.2. Groundwater

Groundwater Investigations ☒ Yes ☐ No

A limited groundwater investigation was performed on the Tucker property for the SI. Eight groundwater samples were collected from temporary well points installed on- and offsite from depths ranging between 26 to 34 ft bgs. Three samples were collected upgradient. TPH was detected at low concentrations in two samples collected offsite and upgradient. Arsenic, beryllium, copper, chromium, lead, mercury, and nickel exceeded their respective DEQ screening levels for industrial sites at all sample locations. Arsenic may be related to naturally occurring arsenic in soils, but the source of the other metals is not known. PAHs were detected in seven groundwater samples (both up and downgradient wells), and eight compounds (see table below) were reported either above an EPA (MCLs or Region 9 PRGs for tap water) or DEQ reference level (OAR 340-122-045, Appendix I). The source of the PAHs is potentially related to the PAHs present in soil. VOCs were detected in two of the offsite samples and three compounds were above the EPA Region 9 reference level for tap water. PCBs were not detected in the groundwater samples (URS 2003).

NAPL **(Historic & Current)** ☐ Yes ☒ No

No NAPL was observed in groundwater beneath the Tucker property. The presence of NAPL in groundwater beneath other properties in this area is unknown.

Dissolved Contaminant Plumes ☐ Yes ☐ No

The presence of other groundwater plumes in this area has not been determined

Plume Characterization Status ☒ **Complete** ☐ **Incomplete**

DEQ has issued a conditional NFA (soil cap must remain in place), indicating that the site was not significantly impacted by onsite sources. However, PAHs were detected in downgradient wells.

Plume Extent

The extent of the groundwater plume is shown on Figure 2.

Min/Max Detections (Current situation)

Analyte	Minimum Concentration	Maximum Concentration
Total Petroleum Hydrocarbons (TPH) (mg/L)		
Gasoline-range	<0.250	13.7
Diesel-range	<0.630U	9.93
Heavy oil-range	<0.630U	<0.808
Polycyclic Aromatic Hydrocarbons (PAHs)(ug/L)		
Napthalene	0.1U	152
Acenapthene	0.1U	0.120
Fluorene	0.1U	0.1
Phenanthrene	0.1U	0.466
Anthracene	0.1U	0.1
Fluoranthene	0.1U	0.603J
Pyrene	0.1U	0.712J
Benzo(a)anthracene	0.1U	0.438
Chrysene	0.1U	0.411
Benzo(b)fluoranthe	0.1U	0.411
Benzo(k)fluoranthe	0.1U	0.438
Benzo(a)pyrene	0.1U	0.548J
Dibenzo(a,h)anthracene	0.1U	0.219
Indeno (1,2,3-cd)pyrene	0.1U	0.384
Benzo(g,h,i)perylene	0.1U	0.466
Metals (mg/L)		
Arsenic	0.00851	0.446
Chromium	0.0212	1.46
Copper	0.0435	2.87
Lead	0.0144	1.07
Mercury	0.0002U	0.00206
Polychlorinated Biphenyls (PCBs)(ug/L)		
Aroclor 1260	0.5U	0.735U

Analyte	Minimum Concentration	Maximum Concentration
Aroclor 1254	0.5U	0.735U
Aroclor 1248	0.5U	0.735U

mg/L = milligrams per liter (ppm)
ug/L = micrograms per liter (ppb)

Preferential Pathways

On the Tucker property, impacted soil was removed during the trench excavation; however, small amounts of impacted soil are reportedly still present at the 5- to 7-ft depth interval, and the sanitary sewer trench cuts through these impacted areas. The slope of the sanitary line is away from the river and therefore is not a preferential pathway. This area is overlain by asphalt, which will limit infiltration. Groundwater is encountered at approximately 18 to 25 ft bgs, which limits contact with the permeable backfill material in the trench (URS 2003).

Downgradient Plume Monitoring Points (min/max detections)

Analyte	Minimum Concentration	Maximum Concentration
Total Petroleum Hydrocarbons (TPH)(mg/L)		
Gasoline-range	<0.250	<0.321
Diesel-range	<0.630U	<0.808
Heavy oil-range	<0.630U	<0.808
Polycyclic Aromatic Hydrocarbons (PAHs)(ug/L)		
Napthalene	0.1U	0.137U
Acenapthene	0.1U	0.137U
Fluorene	0.1U	0.1
Phenanthrene	0.1U	0.466
Anthracene	0.1U	0.1
Fluoranthene	0.1U	0.603J
Pyrene	0.1U	0.712J
Benzo(a)anthracene	0.1U	0.438
Chrysene	0.1U	0.411
Benzo(b)fluoranthe	0.1U	0.411
Benzo(k)fluoranthe	0.1U	0.438
Benzo(a)pyrene	0.1U	0.548J
Dibenzo(a,h)anthracene	0.1U	0.219
Indeno (1,2,3-cd)pyrene	0.1U	0.384
Benzo(g,h,i)perylene	0.1U	0.466
Metals (mg/L)		
Arsenic	0.00851	0.378
Chromium	0.0212	1.32
Copper	0.0435	2.22
Lead	0.0144	1.07
Mercury	0.0002U	0.00206
Polychlorinated Biphenyls (PCBs)(ug/L)		
Aroclor 1260	0.5U	0.735U
Aroclor 1254	0.5U	0.735U

Analyte	Minimum Concentration	Maximum Concentration
Aroclor 1248	0.5U	0.735U

mg/L = milligrams per liter (ppm)
ug/L = micrograms per liter (ppb)

Visual Seep Sample Data ☐ Yes ☐ No

The presence of seeps in this stretch of the river has not been determined.

Nearshore Porewater Data

Porewater samples were collected at Cargill during the dredged material characterization project in 2001 and analyzed for butyltins only. The maximum tributyltin concentration (two samples) was 0.058 ug/L.

Groundwater Plume Temporal Trend

At the Tucker property, PAHs have been detected above either an EPA or DEQ reference level in downgradient temporary well points installed from depths ranging between 26 to 34 ft bgs (URS 2003). Figure 2 shows the extent of the PAH plume based on data collected during the Tucker property SI. Temporal trends cannot be determined from the single sampling event.

Summary

The nature and extent of groundwater contamination beneath most industrial properties in this area is unknown. Groundwater has been investigated only on the Tucker property during the SI in 2001. Analytical data indicate that groundwater in this area is impacted with low levels of petroleum hydrocarbons, metals, VOCs, and PAHs; however, some constituents exceed one or more of the conservative screening criteria used for comparison (e.g., PRGs, MCLs, DEQ groundwater reference levels). Gasoline and diesel hydrocarbons and VOCs were only detected in the upgradient sampling locations, while PAHs were detected primarily onsite and downgradient. PCBs were not detected in the groundwater samples. PAHs appear to be migrating across the subject property toward the Willamette River, which is approximately 250 ft south-southwest of the site. URS (2003) compared groundwater PAH concentrations to DEQ Level II screening level values (SLVs) for aquatic biota exposure to surface water and found that only benzo(a)anthracene and benzo(a)pyrene exceeded their respective SLVs, concluding that these two constituents will likely not reach the river at the concentrations detected in downgradient samples because groundwater factors such as retardation, biodegradation, and adsorption will reduce concentrations over time as the groundwater migrates toward the Willamette River.

10.3. Surface Water

This section discusses only surface water investigations associated with the properties of interest. There may be additional non-stormwater discharges to the river in the east bank area of Portland Harbor between RMs 11 and 11.5 that are not discussed here.

Surface Water Investigation ☐ Yes ☒ No

Twelve private and four public outfalls have been identified on the City's 2007 stormwater outfall layer in this area. The City notes that outfalls in this area have not been fully surveyed, and therefore there maybe other private outfalls that have not been identified (Sanders 2007, pers. comm.). Outfalls are listed below by facility (from up to down river):

- **Cargill:** WR-346, **WR-345**, **WR-344**, WR-343, WR-342, and **WR-341**. All outfalls are active. Bolded outfalls are monitored under the facility's NPDES permit. Outfalls WR-342 and WR-343 are roof drains from the office building. WR-345 drains a maintenance shop area, and WR-341, WR-344, and WR-346 drain the grain storage areas and areas of other industrial activities.

- **City Outfall 43:** The City's outfall layer notes that this outfall is a CSO with stormwater. The upper area draining to Outfall 43 is a combined system that is almost exclusively residential land use; the area closest to the river, which has separated storm and sanitary service, is light and heavy industrial land use. Plumbing records received from the City show that stormwater from both the Tucker Building and Westinghouse drained to City Outfall 43. Most of the stormwater discharging from the Tucker property has been redirected to Outfall 44 after redevelopment, but stormwater from the Westinghouse property still discharges through Outfall 43.

- **Glacier NW:** WR-353, WR-352, WR-351, WR-350, WR-354, and WR-306. All outfalls are active with the exception of WR-354 (unknown status). WR-350, WR-351, and WR-352 are associated with the catch basin system draining the industrial activity area through a stormceptor. WR-353 drains non-contact cooling water.

- **City Outfall 44:** The outfall layer notes that this is a stormwater-only outfall. The outfall basin drains light industrial land uses. Most of the PP&L properties drain to this outfall.

- **City Outfall 44A:** The outfall layer notes that this outfall is a CSO with stormwater. The combined system drains a mix of residential and light industrial land uses; the separated storm system, which is closest to the river, is light industrial. Some of the PP&L properties may drain to this outfall.

- **City Outfall 45:** The outfall layer notes that this is an active 27-inch stormwater-only outfall. The basin drains primarily heavy industrial land use, with some light industrial uses as well. Stormwater from the Northwest Copper Works property discharges through this outfall.

General or Individual Stormwater Permit [Current or Past] ☒ Yes ☐ No

NPDES permits are only provided for the properties of interest in the area between RMs 11 and 11.6 of Portland Harbor's east bank. In 1976, Westinghouse applied for an NPDES permit, but no record of this permit was found in DEQ files.

Facility	Permit Type	File Number	Start Date	Outfalls	Parameters/ Frequency
Cargill	GEN12Z	16996	12/20/01	WR-344, WR-345, WR-341	Standard[1]

[1] Standard GEN12Z permit requirements include pH, oil and grease, total suspended solids, copper, lead, and zinc. *E. coli* may also be required.

Do other non-stormwater wastes discharge to the system? ☐ Yes ☒ No

Stormwater Data ☒ Yes ☐ No

The City's stormwater database contains Cargill stormwater data for the time period of October 2001 through April 2007. Samples are collected at three outfalls (WR-344, WR-345, and WR-341). Total suspended solids (TSS) has exceeded its benchmark (130 mg/L) on 10 occasions since October 2001, with a concentration as high as 876 mg/L recorded in December 2001 at Outfall WR-345. Oil and grease has also exceeded its benchmark (10 mg/L) five times during this same time period. The zinc benchmark has been exceeded four times.

Catch Basin Solids Data ☐ Yes ☒ No

Wastewater Permit ☐ Yes ☒ No

Wastewater Data ☐ Yes ☒ No

Summary

Historic stormwater management, particularly for the shipbuilding years, has not been determined. NPDES benchmarks for TSS, oil & grease, and zinc have been exceeded in stormwater discharging from private outfalls WR-344, WR-345, and WR-341 at the Cargill facility. Currently, stormwater from four or more properties discharge to the river via the two public outfalls in this area (Outfalls 43 and 45). Transformer oil disposal practices at the Westinghouse property are suspected to have contributed PCBs and other contaminants to the river via Outfall 43, but this has not been substantiated. Shallow soil at the Tucker property has been found to contain detectable concentrations of PAHs, PCBs, TPH, and metals; however, it is unlikely that this shallow soil came into contact with stormwater runoff because the soil has been covered with pavement both before and after on-ramp development activities. Drainage from the current PP&L properties may tie in to the public system although connections are not clearly delineated. Rain drains were associated with the control station at the substation properties.

10.4. Sediment

River Sediment Data ☒ Yes ☐ No

Sediment samples have been collected in the vicinity of Outfall 45 (presumably the discharge point for Western Electric), offshore of the Glacier NW facility (including Outfalls 44, 44A), and offshore of the Cargill Grain Elevator. Sediment data are discussed by river area below, and are summarized in Table 2:

Cargill

The largest data set in this area of the river were sediment cores collected by Harding ESE (2001) for the dredged material characterization of sediment in the vicinity of the mooring dock at Cargill. Two additional samples were collected by Hart Crowser (1999) for the dredged material characterization of Port of Portland docks. The sediments in this area were subsequently dredged in 2001. Total PCB Aroclors in these samples ranged from 13.4 to 7,100 ug/kg (Station ISC1). Ammonia concentrations ranged from 65 to 152 ug/kg (Station T01), and silver ranged from 0.103 to 0.359 mg/kg (Station 01020304). The highest concentration of PAHs was detected at Station ISC1 at 84,200 (JA) ug/kg. This concentration was qualified as estimated, however, because not all of the usual individual analytes were available for the total. Aldrin was detected as high as 2 ug/kg in a sample from Station ISC1.

Glacier NW
Three surface samples were collected offshore of Glacier NW during Round 3A. Analyte concentrations were low except for PCB Aroclors, silver, copper, DDx, and TPH. Total PCB Aroclors ranged from 310 (JT) to 5,900 (JT) ug/kg, with the highest concentration detected in sediment from Station UG02. Silver ranged from 0.085 to 0.463 mg/kg (Station UG01). Copper ranged from 21.1 to 2,830 mg/kg at Station UG01. DDx concentrations ranged from 5.3 to 86 ug/kg at Station UG02. Total petroleum hydrocarbons ranged from 160 to 1,600 ug/kg (Station UG01).

Northwest Copper Works/Western Electric (stormwater discharge to Outfall 45)
Three surface samples and one subsurface sample have been collected in the vicinity of Outfall 45. Samples were collected during Round 2 and during the Albina UPRR XPA (Jacobs Engineering 2001). Concentrations of all analytes were low, with the exception of PAHs at Station G516 (see Figure 1). Total PAHs ranged from a low of 28.6 ug/kg in the subsurface sample to a high of 2,290 ug/kg in the surface sample (0 to 25 cm) collected from Station G516. Aldrin was analyzed for in a single sample at Station G516 and detected at a concentration of 0.598 ug/kg.

11. CLEANUP HISTORY AND SOURCE CONTROL MEASURES

11.1. Soil Cleanup/Source Control

Approximately 650 tons of petroleum-impacted soil was removed from the Tucker property in 2001/2002 during construction of the new on-ramp to Interstate Avenue. PCB-contaminated concrete that exceeded the federal PCB cleanup level of 25 ppm in the building floors was also removed and disposed of at the Hillsboro Landfill. Remaining concrete and building materials with PCB concentrations below 25 ppm were crushed and placed in the building basement before covering with clean fill soil (DEQ 2007). DEQ issued a NFA for the Tucker Building in 2004.

11.2. Groundwater Cleanup/Source Control

11.3. Other

The Westinghouse site was paved in 1999, as part of the Bureau of Water's Parking Lot and Site Improvements project for the site. In 2006, the Westinghouse structure was cleaned by an environmental contractor who removed residual materials from the former facility. Demolition of the warehouse is planned for the fall 2007. The site will be paved for material storage, and a water quality swale will be constructed to treat stormwater runoff from the paved site.

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Figures:

Tables:

Attachments:

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 50 100 150 200 250 Feet

Map Features:
City Outfalls
Non-City Outfalls
Dredging
Docks and Structures
Navigation Channel
River miles
Waterfront Taxlots

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Figure 1
Portland Harbor RI/FS
Compilation of Information
East Bank,
River Miles 11 to 11.6

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Upland_Source_Task\Upland_Sources_RM11.5_Tucker_GW_Plume.mxd) TWC -- 10/15/2007 -- 1:40:43 PM

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0 10 20 30 40 50 Feet

FEATURE SOURCES:
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Map Features:
Outfalls
Dredging
Bridges
Docks and Structures
Navigation Channel
River miles
Waterfront Taxlots
PAH Plume

LWG LOWER WILLAMETTE GROUP

Figure 2.
Portland Harbor RI/FS
Compilation of Information
East Bank,
River Miles 11 to 11.6

TABLES

East Bank of Portland Harbor, RMs 11-11.6

Table 1. Potential Sources and Transport Pathways Assessment

Last Updated:

	Media Impacted					**COIs**																		**Potential Complete Pathway**				
						TPH			**VOCs**																			
Description of Potential Source	**Surface Soil**	**Subsurface Soil**	**Groundwater**	**Catch Basin Solids**	**River Sediment**	**Gasoline-Range**	**Diesel - Range**	**Heavier - Range**	**Petroleum-Related (e.g. BTEX)**	**VOCs**	**Chlorinated VOCs**	**SVOCs**	**PAHs**	**Phthalates**	**Phenolics**	**Metals**	**PCBs**	**Herbicides and Pesticides**	**Dioxins/Furans**	**Butyltins**	**Silica, clay**	**Organic partculate Matter**	***[Others -List]***	**Overland Transport**	**Groundwater**	**Direct Discharge - Overwater**	**Direct Discharge - Storm/Wastewater**	**River Bank Erosion**
Upland Areas																												
Former Albina Engine and Machine Works--Shipyard	?	?	?	?	?	x	x	x	x	x		x	x	x		x	x			x				?	?	?	?	?
Former electrical operations at Tucker Building property	x	x	x	?	?		x	x					x				x								?		?	
Former Westinghouse operations	x	?		?	?												x										?	
Northwest Copper Works (former Western Electric site)	x	?		?	?												?										?	
Historical/current dust suppression techniques at Cargill	x			?	?																	x					?	
Historical/current cement handling at Glacier NW	x			?	?											?					?						?	
Historical/current PP&L operations	?			?	?	?	?	?					?				?										?	
Other historical upland operations	x	?		?	?	?	?	?	?	?		?	?			?				?							?	
Overwater Areas																												
Former Albina Engine and Machine Works					x		x	x					x			x	x			x						?	?	
Glacier NW offloading dock					x		x	x					x			x					?					?	?	
Cargill offloading dock					x		x	x					x			x										?	?	
Other historical/current overwater operations					?		?	?					?			?				?						?	?	
Other Areas/Other Issues																												

Notes:

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

Blank = Source, COI and historic and current pathways have been investigated and shown to be not present or incomplete.

UST Underground storage tank
AST Above-ground storage tank
TPH Total petroleum hydrocarbons
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
PAHs Polycyclic aromatic hydrocarbons
BTEX Benzene, toluene, ethylbenzene, and xylenes

Table 2. Queried Sediment Chemistry Data for Cargill.

Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
				Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
Surbsurface													
Aroclor 1016 (ug/kg)	7	0	0						3.1 U	10 U	5.26	3.4 U	10 U
Aroclor 1221 (ug/kg)	7	0	0						3.1 U	10 U	5.26	3.4 U	10 U
Aroclor 1232 (ug/kg)	7	0	0						3.1 U	10 U	5.26	3.4 U	10 U
Aroclor 1242 (ug/kg)	7	1	14.3	24	24	24	24	24	3.4 U	24	10.5	10 U	19 U
Aroclor 1248 (ug/kg)	7	0	0						3.4 U	21 U	7.81	3.5 U	10 U
Aroclor 1254 (ug/kg)	7	3	42.9	8.3 J	35	19.4	15 J	15 J	3.4 U	35	12.2	10 U	15 J
Aroclor 1260 (ug/kg)	7	7	100	5.1 J	7100	1150	38	710	5.1 J	7100	1150	38	710
Aroclors (ug/kg)	7	7	100	13.4 JT	7100 T	1160	73 T	710 T	13.4 JT	7100 T	1160	73 T	710 T
Butyltin ion (ug/kg)	5	4	80	1 J	1.7	1.33	1.3 J	1.3 J	0.43 U	1.7	1.15	1.3 J	1.3 J
Butyltin ion (ug/l)	1	0	0						0.012 U	0.012 U	0.012	0.012 U	0.012 U
Dibutyltin ion (ug/kg)	5	5	100	0.94 J	12	6.75	6.9	7.6	0.94 J	12	6.75	6.9	7.6
Dibutyltin ion (ug/l)	1	0	0						0.016 U	0.016 U	0.016	0.016 U	0.016 U
Tributyltin ion (ug/kg)	5	5	100	13	220	161	200	210	13	220	161	200	210
Tributyltin ion (ug/l)	2	2	100	0.05 G	0.058	0.054	0.05 G	0.05 G	0.05 G	0.058	0.054	0.05 G	0.05 G
Tetrabutyltin (ug/kg)	5	4	80	0.58 J	2.2	1.2	0.61 J	1.4	0.55 U	2.2	1.07	0.61 J	1.4
Tetrabutyltin (ug/l)	1	0	0						0.04 U	0.04 U	0.04	0.04 U	0.04 U
Sulfide (mg/kg)	7	7	100	0.9	58 G	10.2	2.3	3	0.9	58 G	10.2	2.3	3
Ammonia (mg/kg)	7	5	71.4	65	152	106	108	112	65	152	99.4	100 UJ	112
Total organic carbon (percent)	6	6	100	0.4	1.03	0.707	0.67	0.82	0.4	1.03	0.707	0.67	0.82
Total solids (percent)	5	5	100	68.6	76.9	72	71.7	72	68.6	76.9	72	71.7	72
Total volatile solids (percent)	5	5	100	2.68	3.96	3.26	3.1	3.52	2.68	3.96	3.26	3.1	3.52
Gravel (percent)	5	5	100		18	5.44	2.8	6	0	18	5.44	2.8	6
Sand (percent)	5	5	100	58.2	86.9	72.5	72.9	75.5	58.2	86.9	72.5	72.9	75.5
Fines (percent)	5	5	100	12.7 T	31 T	22.1	21.7 T	23.8 T	12.7 T	31 T	22.1	21.7 T	23.8 T
Silt (percent)	5	5	100	12.7	26.9	21	21.7	22.8	12.7	26.9	21	21.7	22.8
Clay (percent)	5	5	100		4.1	1.02		1	0	4.1	1.02	0	1
Lead (mg/kg)	7	7	100	14.4	367	70.2	15.7	35	14.4	367	70.2	15.7	35
Mercury (mg/kg)	7	7	100	0.03	0.08	0.0486	0.04	0.07	0.03	0.08	0.0486	0.04	0.07
Nickel (mg/kg)	7	7	100	19.7	25.5 G	21.5	20.2	22.8	19.7	25.5 G	21.5	20.2	22.8
Silver (mg/kg)	7	7	100	0.103	0.359	0.215	0.2 G	0.303	0.103	0.359	0.215	0.2 G	0.303
Antimony (mg/kg)	7	0	0						0.08 U	0.26 UG	0.143	0.12 U	0.19 UG
Arsenic (mg/kg)	7	7	100	1.9 G	3.1	2.34	2.2	2.7	1.9 G	3.1	2.34	2.2	2.7
Cadmium (mg/kg)	7	7	100	0.21	0.32	0.259	0.26 G	0.26	0.21	0.32	0.259	0.26 G	0.26
Chromium (mg/kg)	7	7	100	16.8	47.8 G	24	20.5	21.8	16.8	47.8 G	24	20.5	21.8
Copper (mg/kg)	7	5	71.4	20.2	26.4	22.3	20.5	24.4	20.2	26.6 UG	23.4	24.4	26.4
Zinc (mg/kg)	7	7	100	68.3	115 G	81.3	72.7	90.1 G	68.3	115 G	81.3	72.7	90.1 G
Anthracene (ug/kg)	7	6	85.7	22 J	2200	394	26	48	20 U	2200	341	26	48
Pyrene (ug/kg)	7	7	100	83	19000	2850	160	350	83	19000	2850	160	350
Total PAHs (ug/kg)	7	7	100	588 JT	84200 JA	13300	1282 JT	3811 JT	588 JT	84200 JA	13300	1282 JT	3811 JT
Benzo(g,h,i)perylene (ug/kg)	7	7	100	36 J	4400	756	100	350	36 J	4400	756	100	350
Indeno(1,2,3-cd)pyrene (ug/kg)	7	7	100	29 J	4600	800	100	370	29 J	4600	800	100	370
Benzo(b)fluoranthene (ug/kg)	7	7	100	31	2900	569	150	580	31	2900	569	150	580
Fluoranthene (ug/kg)	7	7	100	71 J	16000	2430	160	380	71 J	16000	2430	160	380
Benzo(k)fluoranthene (ug/kg)	7	7	100	18 J	5100	780	51	190	18 J	5100	780	51	190
Acenaphthylene (ug/kg)	7	6	85.7	2.5 J	240	50.2	12 J	25	2.5 J	240	45.9	13 J	25
Chrysene (ug/kg)	7	7	100	40	8100	1270	120	400	40	8100	1270	120	400
Benzo(a)pyrene (ug/kg)	7	7	100	40 J	7300	1160	110	430	40 J	7300	1160	110	430
Dibenzo(a,h)anthracene (ug/kg)	7	7	100	7.9 J	660	125	23	97	7.9 J	660	125	23	97
Benzo(a)anthracene (ug/kg)	7	7	100	29 J	6400	1000	86	310	29 J	6400	1000	86	310
Acenaphthene (ug/kg)	7	6	85.7	6.1 J	34	15.1	10 J	20	6.1 J	34	15.8	14 J	20
Phenanthrene (ug/kg)	7	7	100	45	6800	1070	120	240	45	6800	1070	120	240
Fluorene (ug/kg)	7	6	85.7	9.2 J	190	45	13 J	29	9.2 J	190	41.5	18 J	29
Naphthalene (ug/kg)	7	6	85.7	5.8 J	190	42.5	10 J	21	5.8 J	190	39.3	20 J	21
2-Methylnaphthalene (ug/kg)	5	4	80	5.1 J	12 J	9.23	9.8 J	10 J	4.3 U	12 J	8.24	9.8 J	10 J

Table 2. Queried Sediment Chemistry Data for Cargill.

Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
Benzo(b+k)fluoranthene (ug/kg)	7	7	100	57 T	8000 T	1350	201 T	770 T	57 T	8000 T	1350	201 T	770 T
High Molecular Weight PAH (ug/kg)	7	7	100	441 JT	74500 T	11800	1090 T	3460 T	441 JT	74500 T	11800	1090 T	3460 T
Low Molecular Weight PAH (ug/kg)	7	7	100	45 JA	9650 JA	1540	212 JT	351 JT	45 JA	9650 JA	1540	212 JT	351 JT
Heptachlor epoxide (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
Endosulfan sulfate (ug/kg)	2	0	0						2 U	20 U	11	2 U	2 U
Aldrin (ug/kg)	7	0	0						0.31 U	2 U	0.854	0.34 U	2 U
alpha-Hexachlorocyclohexane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
beta-Hexachlorocyclohexane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
delta-Hexachlorocyclohexane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
beta-Endosulfan (ug/kg)	2	0	0						2 U	20 U	11	2 U	2 U
4,4'-DDT (ug/kg)	7	1	14.3	0.92 J	0.92 J	0.92	0.92 J	0.92 J	0.68 U	20 U	4.03	1.3 U	2.2 U
cis-Chlordane (ug/kg)	7	0	0						0.15 U	20 U	3.29	0.16 U	2 U
trans-Chlordane (ug/kg)	7	0	0						0.21 U	20 U	3.64	0.56 U	3 UB
Endrin ketone (ug/kg)	2	0	0						2 U	20 U	11	2 U	2 U
gamma-Hexachlorocyclohexane (ug/kg)	7	0	0						0.32 U	2 U	0.816	0.35 U	2 U
Dieldrin (ug/kg)	7	0	0						0.4 UJ	65 UB	10.1	0.48 UJ	2 U
Endrin (ug/kg)	2	0	0						2 U	20 U	11	2 U	2 U
Methoxychlor (ug/kg)	2	0	0						4 U	40 U	22	4 U	4 U
4,4'-DDD (ug/kg)	7	1	14.3	0.69 J	0.69 J	0.69	0.69 J	0.69 J	0.2 U	20 U	3.61	0.73 U	2 U
4,4'-DDE (ug/kg)	7	1	14.3	0.81 J	0.81 J	0.81	0.81 J	0.81 J	0.32 U	20 U	3.54	0.81 J	2 U
Endrin aldehyde (ug/kg)	2	0	0						15 UB	190 UB	103	15 UB	15 UB
Heptachlor (ug/kg)	7	0	0						0.18 U	2 U	0.709	0.2 U	2 U
Toxaphene (ug/kg)	2	0	0						300 U	300 UB	300	300 U	300 U
alpha-Endosulfan (ug/kg)	2	0	0						2 U	20 U	11	2 U	2 U
Total of 2,4' and 4,4'-DDD (ug/kg)	7	1	14.3	0.69 JA	0.69 JA	0.69	0.69 JA	0.69 JA	0.2 UA	20 UA	3.61	0.73 UA	2 UA
Total of 2,4' and 4,4'-DDE (ug/kg)	7	1	14.3	0.81 JA	0.81 JA	0.81	0.81 JA	0.81 JA	0.32 UA	20 UA	3.54	0.81 JA	2 UA
Total of 2,4' and 4,4'-DDT (ug/kg)	7	1	14.3	0.92 JA	0.92 JA	0.92	0.92 JA	0.92 JA	0.68 UA	20 UA	4.03	1.3 UA	2.2 UA
Total of 2,4' and 4,4'-DDD, -DDE, -DDT (ug/kg)	7	1	14.3	2.42 JA	2.42 JA	2.42	2.42 JA	2.42 JA	0.73 UA	20 UA	4.26	2 UA	2.42 JA
Total of 4,4'-DDD, -DDE, -DDT (ug/kg)	7	1	14.3	2.42 T	2.42 T	2.42	2.42 T	2.42 T	0.73 UT	20 UT	4.26	2 UT	2.42 T
Total Chlordanes (ug/kg)	7	0	0						0.21 UA	20 UA	3.64	0.56 UA	3 UA
Total Endosulfan (ug/kg)	2	0	0						2 UT	20 UT	11	2 UT	2 UT
2,4-Dimethylphenol (ug/kg)	7	0	0						6 U	23 UJ	17.1	21 UJ	22 UJ
2-Methylphenol (ug/kg)	7	0	0						3.1 U	6 U	4.11	3.4 U	6 U
4-Methylphenol (ug/kg)	7	7	100	16 J	54	36.7	44	52	16 J	54	36.7	44	52
Pentachlorophenol (ug/kg)	7	1	14.3	16 J	16 J	16	16 J	16 J	3 U	61 U	21.5	3.3 U	61 U
Phenol (ug/kg)	7	0	0						20 U	46 U	34	38 UJ	44 U
Dimethyl phthalate (ug/kg)	7	1	14.3	5.4 J	5.4 J	5.4	5.4 J	5.4 J	3.4 U	20 U	8.56	3.8 U	20 U
Diethyl phthalate (ug/kg)	7	0	0						4 U	20 U	8.77	4.3 U	20 U
Dibutyl phthalate (ug/kg)	7	2	28.6	4.8 J	8.1 J	6.45	4.8 J	4.8 J	3.4 U	20 U	9.09	4.8 J	20 U
Butylbenzyl phthalate (ug/kg)	7	2	28.6	14 J	28	21	14 J	14 J	1.8 U	28	9.97	2 U	20 U
Di-n-octyl phthalate (ug/kg)	7	0	0						2.2 U	20 U	7.36	2.3 U	20 U
Bis(2-ethylhexyl) phthalate (ug/kg)	7	3	42.9	160	220 J	200	220	220	160	220 J	189	180 U	220
1,2,4-Trichlorobenzene (ug/kg)	5	0	0						0.8 U	0.9 U	0.858	0.86 U	0.87 U
1,2-Dichlorobenzene (ug/kg)	7	0	0						0.84 U	1 U	0.93	0.92 U	1 U
1,3-Dichlorobenzene (ug/kg)	7	0	0						0.87 U	1 U	0.951	0.95 U	1 U
1,4-Dichlorobenzene (ug/kg)	7	0	0						0.96 U	1.1 U	1.05	1.1 U	1.1 U
Benzoic acid (ug/kg)	7	5	71.4	73 J	130 J	94	82 J	110 J	73 J	130 J	95.7	100 U	110 J
Benzyl alcohol (ug/kg)	7	4	57.1	5.2 J	8.8 J	6.33	5.6 J	5.7 J	3.6 U	8.8 J	5.84	5.7 J	6 U
Dibenzofuran (ug/kg)	7	6	85.7	4.2 J	27	11.7	9.2 J	12 J	4.2 J	27	12.9	9.4 J	20 U
Hexachlorobenzene (ug/kg)	7	0	0						4 U	20 U	8.73	4.3 U	20 U
Hexachlorobutadiene (ug/kg)	7	0	0						3.6 U	20 U	8.49	3.9 U	20 U
Hexachloroethane (ug/kg)	5	0	0						3 U	3.4 U	3.24	3.3 U	3.3 UJ
N-Nitrosodiphenylamine (ug/kg)	7	0	0						3.2 U	12 U	5.87	3.5 U	12 U

Table 2. Queried Sediment Chemistry Data for Glacier/Lonestar.

Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
				Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
Surface													
surfa Aroclor 1016 (ug/kg)	3	0	0						2.4 U	320 U	115	22 U	22 U
surfa Aroclor 1221 (ug/kg)	3	0	0						2.4 U	22 U	12.1	12 U	12 U
surfa Aroclor 1232 (ug/kg)	3	0	0						2.4 U	170 U	64.8	22 U	22 U
surfa Aroclor 1242 (ug/kg)	3	0	0						2.4 U	190 U	71.5	22 U	22 U
surfa Aroclor 1248 (ug/kg)	3	0	0						2.4 U	160 U	61.5	22 U	22 U
surfa Aroclor 1254 (ug/kg)	3	3	100	42	1300 J	551	310 J	310 J	42	1300 J	551	310 J	310 J
surfa Aroclor 1260 (ug/kg)	3	3	100	270 NJ	4600 J	1770	450	450	270 NJ	4600 J	1770	450	450
surfa Aroclor 1262 (ug/kg)	3	0	0						2.4 U	22 U	12.1	12 U	12 U
surfa Aroclor 1268 (ug/kg)	3	0	0						2.4 U	22 U	12.1	12 U	12 U
surfa Aroclors (ug/kg)	3	3	100	310 JT	5900 JT	2320	760 JT	760 JT	310 JT	5900 JT	2320	760 JT	760 JT
surfa Specific Gravity (NA)	3	3	100	1.65	1.83	1.73	1.71	1.71	1.65	1.83	1.73	1.71	1.71
surfa Total organic carbon (percent)	3	3	100	0.36	1.12	0.737	0.73	0.73	0.36	1.12	0.737	0.73	0.73
surfa Total solids (percent)	3	3	100	71.3 T	79.5	74.1	71.4	71.4	71.3 T	79.5	74.1	71.4	71.4
surfa Medium gravel (percent)	3	3	100	28	50.6	35.9	29	29	28	50.6	35.9	29	29
surfa Fine gravel (percent)	3	3	100	7.86	10.9	9.12	8.61	8.61	7.86	10.9	9.12	8.61	8.61
surfa Very coarse sand (percent)	3	3	100	3.49	7.17	5.82	6.8	6.8	3.49	7.17	5.82	6.8	6.8
surfa Coarse sand (percent)	3	3	100	7.6	11	9.83	10.9	10.9	7.6	11	9.83	10.9	10.9
surfa Medium sand (percent)	3	3	100	14	21.6	19	21.3	21.3	14	21.6	19	21.3	21.3
surfa Fine sand (percent)	3	3	100	4.58	18.3	12.7	15.2	15.2	4.58	18.3	12.7	15.2	15.2
surfa Very fine sand (percent)	3	3	100	1.22	5.06	3.54	4.34	4.34	1.22	5.06	3.54	4.34	4.34
surfa Fines (percent)	3	3	100	3.56 T	4.88 T	4.03	3.66 T	3.66 T	3.56 T	4.88 T	4.03	3.66 T	3.66 T
surfa Coarse silt (percent)	3	3	100	0.92	1.29	1.1	1.1	1.1	0.92	1.29	1.1	1.1	1.1
surfa Medium silt (percent)	3	3	100	0.64	0.93	0.787	0.79	0.79	0.64	0.93	0.787	0.79	0.79
surfa Fine silt (percent)	3	3	100	0.31	0.74	0.513	0.49	0.49	0.31	0.74	0.513	0.49	0.49
surfa Very fine silt (percent)	3	3	100	0.57	0.75	0.66	0.66	0.66	0.57	0.75	0.66	0.66	0.66
surfa 8-9 Phi clay (percent)	3	3	100	0.28	0.69	0.427	0.31	0.31	0.28	0.69	0.427	0.31	0.31
surfa >9 Phi clay (percent)	3	3	100	0.48	0.58	0.543	0.57	0.57	0.48	0.58	0.543	0.57	0.57
surfa Aluminum (mg/kg)	3	3	100	9020	14900	11900	11800	11800	9020	14900	11900	11800	11800
surfa Lead (mg/kg)	3	3	100	13.5	27.4	22.2	25.8	25.8	13.5	27.4	22.2	25.8	25.8
surfa Mercury (mg/kg)	3	3	100	0.035	0.093 J	0.0623	0.059 J	0.059 J	0.035	0.093 J	0.0623	0.059 J	0.059 J
surfa Nickel (mg/kg)	3	3	100	16.2	27	22.8	25.3	25.3	16.2	27	22.8	25.3	25.3
surfa Silver (mg/kg)	3	3	100	0.085	0.463 J	0.246	0.191	0.191	0.085	0.463 J	0.246	0.191	0.191
surfa Antimony (mg/kg)	3	3	100	0.18 J	19.4 J	6.66	0.39 J	0.39 J	0.18 J	19.4 J	6.66	0.39 J	0.39 J
surfa Arsenic (mg/kg)	3	3	100	2.06	3.34 J	2.88	3.25	3.25	2.06	3.34 J	2.88	3.25	3.25
surfa Cadmium (mg/kg)	3	3	100	0.08	0.23	0.16	0.17	0.17	0.08	0.23	0.16	0.17	0.17
surfa Chromium (mg/kg)	3	3	100	29.5	72.2	53.1	57.7	57.7	29.5	72.2	53.1	57.7	57.7
surfa Copper (mg/kg)	3	3	100	21.1	2830	959	26.3	26.3	21.1	2830	959	26.3	26.3
surfa Zinc (mg/kg)	3	3	100	66.1	117	95.4	103	103	66.1	117	95.4	103	103
surfa Selenium (mg/kg)	3	1	33.3	0.07 J	0.07 J	0.07	0.07 J	0.07 J	0.06 U	0.07 J	0.0633	0.06 U	0.06 U
surfa Anthracene (ug/kg)	3	2	66.7	15	20	17.5	15	15	2.2 U	20	12.4	15	15
surfa Pyrene (ug/kg)	3	3	100	21	190	107	110	110	21	190	107	110	110
surfa Total PAHs (ug/kg)	3	3	100	100 JT	980 JA	677	950 JA	950 JA	100 JT	980 JA	677	950 JA	950 JA
surfa Benzo(g,h,i)perylene (ug/kg)	3	3	100	6.1	93	53.4	61	61	6.1	93	53.4	61	61
surfa Indeno(1,2,3-cd)pyrene (ug/kg)	3	3	100	5.4	63	37.1	43	43	5.4	63	37.1	43	43
surfa Benzo(b)fluoranthene (ug/kg)	3	3	100	6.4	150 J	88.8	110 J	110 J	6.4	150 J	88.8	110 J	110 J
surfa Fluoranthene (ug/kg)	3	3	100	15	180	102	110	110	15	180	102	110	110
surfa Benzo(k)fluoranthene (ug/kg)	1	1	100	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
surfa Acenaphthylene (ug/kg)	3	2	66.7	6.3	8.6	7.45	6.3	6.3	1.3 U	8.6	5.4	6.3	6.3
surfa Chrysene (ug/kg)	3	3	100	8.9	190	103	110	110	8.9	190	103	110	110
surfa Benzo(a)pyrene (ug/kg)	3	3	100	7	45	29.3	36	36	7	45	29.3	36	36
surfa Dibenzo(a,h)anthracene (ug/kg)	3	2	66.7	20	45	32.5	20	20	0.82 U	45	21.9	20	20
surfa Benzo(a)anthracene (ug/kg)	3	3	100	6.4	83	49.8	60	60	6.4	83	49.8	60	60

Table 2. Queried Sediment Chemistry Data for Glacier/Lonestar.

		Number	Number	%	Detected Concentrations					Detected and Nondetected Concentrations				
	Analyte	of Samples	Detected	Detected	Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surfa	Acenaphthene (ug/kg)	3	3	100	0.75 J	9.8	6.48	8.9	8.9	0.75 J	9.8	6.48	8.9	8.9
surfa	Phenanthrene (ug/kg)	3	3	100	11	58	36.7	41	41	11	58	36.7	41	41
surfa	Fluorene (ug/kg)	3	2	66.7	12	15	13.5	12	12	1.3 U	15	9.43	12	12
surfa	Naphthalene (ug/kg)	3	3	100	8.6	11	9.53	9	9	8.6	11	9.53	9	9
surfa	2-Methylnaphthalene (ug/kg)	3	2	66.7	7.9	10	8.95	7.9	7.9	2.5 U	10	6.8	7.9	7.9
surfa	High Molecular Weight PAH (ug/kg)	3	3	100	81 T	880 JA	594	820 JA	820 JA	81 T	880 JA	594	820 JA	820 JA
surfa	Low Molecular Weight PAH (ug/kg)	3	3	100	20 JT	130 T	83.3	100 T	100 T	20 JT	130 T	83.3	100 T	100 T
surfa	Heptachlor epoxide (ug/kg)	3	0	0						0.99 U	10 U	4.3	1.9 U	1.9 U
surfa	Endosulfan sulfate (ug/kg)	3	0	0						0.43 U	1.1 U	0.843	1 U	1 U
surfa	Mirex (ug/kg)	3	0	0						0.15 U	1.4 U	0.95	1.3 U	1.3 U
surfa	Oxychlordane (ug/kg)	3	0	0						0.52 U	10 U	5.24	5.2 U	5.2 U
surfa	Aldrin (ug/kg)	3	0	0						0.22 U	2.1 U	1.41	1.9 U	1.9 U
surfa	alpha-Hexachlorocyclohexane (ug/kg)	3	0	0						0.37 U	3.7 U	2.46	3.3 U	3.3 U
surfa	beta-Hexachlorocyclohexane (ug/kg)	3	1	33.3	4 NJ	4 NJ	4	4 NJ	4 NJ	3.8 U	4.2 U	4	4 NJ	4 NJ
surfa	delta-Hexachlorocyclohexane (ug/kg)	3	0	0						0.77 U	12 U	5.56	3.9 U	3.9 U
surfa	beta-Endosulfan (ug/kg)	3	0	0						2.7 U	11 U	7.9	10 U	10 U
surfa	2,4'-DDE (ug/kg)	3	0	0						0.99 U	20 U	8.06	3.2 U	3.2 U
surfa	trans-Nonachlor (ug/kg)	3	0	0						0.99 U	1.3 U	1.16	1.2 U	1.2 U
surfa	4,4'-DDT (ug/kg)	3	0	0						2.6 U	280 U	97.1	8.6 U	8.6 U
surfa	cis-Chlordane (ug/kg)	3	0	0						3.2 U	4.7 U	4.13	4.5 U	4.5 U
surfa	cis-Nonachlor (ug/kg)	3	0	0						0.99 U	300 U	101	1.2 U	1.2 U
surfa	trans-Chlordane (ug/kg)	3	1	33.3	2.8 J	2.8 J	2.8	2.8 J	2.8 J	2.8 J	14 U	7.3	5.1 U	5.1 U
surfa	2,4'-DDD (ug/kg)	3	3	100	5.3 J	86	33.8	10 J	10 J	5.3 J	86	33.8	10 J	10 J
surfa	Endrin ketone (ug/kg)	3	0	0						10 U	96 U	40.3	15 U	15 U
surfa	gamma-Hexachlorocyclohexane (ug/kg)	3	1	33.3	4.5 NJ	4.5 NJ	4.5	4.5 NJ	4.5 NJ	1.9 U	4.5 NJ	2.83	2.1 U	2.1 U
surfa	Dieldrin (ug/kg)	3	0	0						3.6 U	45 U	17.6	4.1 U	4.1 U
surfa	Endrin (ug/kg)	3	0	0						1.6 U	2.8 U	2.33	2.6 U	2.6 U
surfa	Methoxychlor (ug/kg)	3	0	0						0.15 U	33 U	12.7	4.8 U	4.8 U
surfa	4,4'-DDD (ug/kg)	3	1	33.3	0.43 J	0.43 J	0.43	0.43 J	0.43 J	0.43 J	1.7 U	1.24	1.6 U	1.6 U
surfa	4,4'-DDE (ug/kg)	3	0	0						0.99 U	1.4 U	1.23	1.3 U	1.3 U
surfa	Endrin aldehyde (ug/kg)	3	0	0						0.99 U	44 U	18.2	9.5 U	9.5 U
surfa	Heptachlor (ug/kg)	3	0	0						1.1 U	2.2 U	1.5	1.2 U	1.2 U
surfa	2,4'-DDT (ug/kg)	3	1	33.3	13 NJ	13 NJ	13	13 NJ	13 NJ	10 U	47 U	23.3	13 NJ	13 NJ
surfa	Toxaphene (ug/kg)	3	0	0						78 U	4000 U	1490	400 U	400 U
surfa	alpha-Endosulfan (ug/kg)	3	0	0						2.2 U	4.5 U	3.03	2.4 U	2.4 U
surfa	Total of 2,4' and 4,4'-DDD (ug/kg)	3	3	100	5.3 JT	86 T	33.8	10 JT	10 JT	5.3 JT	86 T	33.8	10 JT	10 JT
surfa	Total of 2,4' and 4,4'-DDE (ug/kg)	3	0	0						0.99 UT	20 UT	8.06	3.2 UT	3.2 UT
surfa	Total of 2,4' and 4,4'-DDT (ug/kg)	3	1	33.3	13 JT	13 JT	13	13 JT	13 JT	10 UT	280 UT	101	13 JT	13 JT
surfa	Total of 2,4' and 4,4'-DDD, -DDE, -DDT (ug/kg)	3	3	100	5.3 JT	86 T	38.1	23 JT	23 JT	5.3 JT	86 T	38.1	23 JT	23 JT
surfa	Total of 4,4'-DDD, -DDE, -DDT (ug/kg)	3	1	33.3	0.43 JT	0.43 JT	0.43	0.43 JT	0.43 JT	0.43 JT	280 UT	96.3	8.6 UT	8.6 UT
surfa	Total Chlordanes (ug/kg)	3	1	33.3	2.8 JT	2.8 JT	2.8	2.8 JT	2.8 JT	2.8 JT	300 UT	103	5.1 UT	5.1 UT
surfa	Diesel Range Hydrocarbons (mg/kg)	3	3	100	23 J	98 J	68	83 J	83 J	23 J	98 J	68	83 J	83 J
surfa	Gasoline Range Hydrocarbons (mg/kg)	3	1	33.3	1.2 J	1.2 J	1.2	1.2 J	1.2 J	0.75 U	1.2 J	0.923	0.82 U	0.82 U
surfa	Residual Range Hydrocarbons (mg/kg)	3	3	100	140 J	1500 J	703	470 J	470 J	140 J	1500 J	703	470 J	470 J
surfa	Total Petroleum Hydrocarbons (mg/kg)	3	3	100	160 JT	1600 JT	770	550 JT	550 JT	160 JT	1600 JT	770	550 JT	550 JT
surfa	2,3,5,6-Tetrachlorophenol (ug/kg)	3	0	0						0.42 U	81 U	27.3	0.43 U	0.43 U
surfa	2,4,5-Trichlorophenol (ug/kg)	3	0	0						0.77 U	7 U	2.85	0.78 U	0.78 U
surfa	2,4,6-Trichlorophenol (ug/kg)	3	0	0						0.55 U	5 U	2.03	0.55 U	0.55 U
surfa	2,4-Dichlorophenol (ug/kg)	3	0	0						2.3 U	2.6 U	2.47	2.5 U	2.5 U
surfa	2,4-Dimethylphenol (ug/kg)	3	0	0						7 U	7.8 U	7.5	7.7 U	7.7 U
surfa	2,4-Dinitrophenol (ug/kg)	3	0	0						46 U	51 U	49	50 U	50 U
surfa	2-Chlorophenol (ug/kg)	3	0	0						2.2 U	2.4 U	2.33	2.4 U	2.4 U
surfa	2-Methylphenol (ug/kg)	3	0	0						4.3 U	4.8 U	4.63	4.8 U	4.8 U

Table 2. Queried Sediment Chemistry Data for Glacier/Lonestar.

Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
				Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surfa 2-Nitrophenol (ug/kg)	3	0	0						3.3 U	3.7 U	3.57	3.7 U	3.7 U
surfa 4,6-Dinitro-2-methylphenol (ug/kg)	3	0	0						2.2 U	2.4 U	2.33	2.4 U	2.4 U
surfa 4-Chloro-3-methylphenol (ug/kg)	3	0	0						2.7 U	3 U	2.9	3 U	3 U
surfa 4-Methylphenol (ug/kg)	3	0	0						3.7 U	4.1 U	3.97	4.1 U	4.1 U
surfa 4-Nitrophenol (ug/kg)	3	0	0						38 U	43 U	41	42 U	42 U
surfa Pentachlorophenol (ug/kg)	3	2	66.7	0.35 J	1.8 J	1.08	0.35 J	0.35 J	0.35 J	1.8 J	1.32	1.8 U	1.8 U
surfa Phenol (ug/kg)	3	0	0						2.4 U	6 U	3.7	2.7 U	2.7 U
surfa 2,3,4,5-Tetrachlorophenol (ug/kg)	3	0	0						0.87 U	7.8 U	5.12	6.7 U	6.7 U
surfa 3,4-Dichlorophenol (ug/kg)	1	0	0						0.8 U	0.8 U	0.8	0.8 U	0.8 U
surfa 3,5-Dichlorophenol (ug/kg)	1	0	0						2.4 U	2.4 U	2.4	2.4 U	2.4 U
surfa Dimethyl phthalate (ug/kg)	3	0	0						2.3 U	2.6 U	2.47	2.5 U	2.5 U
surfa Diethyl phthalate (ug/kg)	3	0	0						4.5 U	7.6 U	5.93	5.7 U	5.7 U
surfa Dibutyl phthalate (ug/kg)	3	2	66.7	4.6 J	13	8.8	4.6 J	4.6 J	3.7 U	13	7.1	4.6 J	4.6 J
surfa Butylbenzyl phthalate (ug/kg)	3	0	0						1.9 U	22 U	8.67	2.1 U	2.1 U
surfa Di-n-octyl phthalate (ug/kg)	3	0	0						1.6 U	17 U	6.77	1.7 U	1.7 U
surfa Bis(2-ethylhexyl) phthalate (ug/kg)	3	3	100	9 J	140	86.3	110 J	110 J	9 J	140	86.3	110 J	110 J
surfa 1,2,4-Trichlorobenzene (ug/kg)	3	1	33.3	6.7 J	6.7 J	6.7	6.7 J	6.7 J	1.9 U	6.7 J	3.57	2.1 U	2.1 U
surfa 1,2-Dichlorobenzene (ug/kg)	3	0	0						1.7 U	1.9 U	1.83	1.9 U	1.9 U
surfa 1,3-Dichlorobenzene (ug/kg)	3	0	0						2.1 U	2.3 U	2.23	2.3 U	2.3 U
surfa 1,4-Dichlorobenzene (ug/kg)	3	1	33.3	17	17	17	17	17	0.24 U	17	5.84	0.27 U	0.27 U
surfa Azobenzene (ug/kg)	3	0	0						3.1 U	3.4 U	3.3	3.4 U	3.4 U
surfa 2,4-Dinitrotoluene (ug/kg)	3	0	0						3.6 U	4 U	3.83	3.9 U	3.9 U
surfa 2,6-Dinitrotoluene (ug/kg)	3	0	0						3.6 U	4 U	3.83	3.9 U	3.9 U
surfa 2-Chloronaphthalene (ug/kg)	3	0	0						4.6 U	5.1 U	4.9	5 U	5 U
surfa 2-Nitroaniline (ug/kg)	3	0	0						3.4 U	3.8 U	3.67	3.8 U	3.8 U
surfa 3,3'-Dichlorobenzidine (ug/kg)	3	0	0						4.7 U	52 U	20.6	5.2 U	5.2 U
surfa 3-Nitroaniline (ug/kg)	3	0	0						3.3 U	3.7 U	3.57	3.7 U	3.7 U
surfa 4-Bromophenyl phenyl ether (ug/kg)	3	0	0						1.8 U	2 U	1.93	2 U	2 U
surfa 4-Chloroaniline (ug/kg)	3	0	0						2.7 U	3 U	2.9	3 U	3 U
surfa 4-Chlorophenyl phenyl ether (ug/kg)	3	0	0						2.6 U	2.9 U	2.77	2.8 U	2.8 U
surfa 4-Nitroaniline (ug/kg)	3	0	0						4.3 U	4.8 U	4.63	4.8 U	4.8 U
surfa Aniline (ug/kg)	3	0	0						1.9 U	2.2 U	2.07	2.1 U	2.1 U
surfa Benzoic acid (ug/kg)	3	0	0						130 UJ	140 U	137	140 UJ	140 UJ
surfa Benzyl alcohol (ug/kg)	3	1	33.3	7.7 J	7.7 J	7.7	7.7 J	7.7 J	4.7 U	7.7 J	5.87	5.2 U	5.2 U
surfa Bis(2-chloroethoxy) methane (ug/kg)	3	0	0						1.7 U	1.9 U	1.83	1.9 U	1.9 U
surfa Bis(2-chloroethyl) ether (ug/kg)	3	0	0						3.1 U	3.4 U	3.3	3.4 U	3.4 U
surfa Carbazole (ug/kg)	3	1	33.3	9.3 J	9.3 J	9.3	9.3 J	9.3 J	1.7 U	9.3 J	4.3	1.9 U	1.9 U
surfa Dibenzofuran (ug/kg)	3	3	100	0.85 J	7.4	4.45	5.1	5.1	0.85 J	7.4	4.45	5.1	5.1
surfa Hexachlorobenzene (ug/kg)	3	0	0						0.12 U	1.1 U	0.74	1 U	1 U
surfa Hexachlorobutadiene (ug/kg)	3	0	0						0.69 U	2 U	1.5	1.8 U	1.8 U
surfa Hexachlorocyclopentadiene (ug/kg)	3	0	0						19 U	22 U	20.7	21 U	21 U
surfa Hexachloroethane (ug/kg)	3	0	0						0.23 U	2.3 U	1.54	2.1 U	2.1 U
surfa Isophorone (ug/kg)	3	0	0						2.1 U	2.3 U	2.23	2.3 U	2.3 U
surfa Nitrobenzene (ug/kg)	3	0	0						2.6 U	2.9 U	2.77	2.8 U	2.8 U
surfa N-Nitrosodimethylamine (ug/kg)	3	0	0						7.7 U	8.6 U	8.27	8.5 U	8.5 U
surfa N-Nitrosodipropylamine (ug/kg)	3	0	0						4.1 U	4.5 U	4.37	4.5 U	4.5 U
surfa N-Nitrosodiphenylamine (ug/kg)	3	0	0						2.8 U	3.1 U	3	3.1 U	3.1 U
surfa Bis(2-chloroisopropyl) ether (ug/kg)	3	0	0						1.6 U	1.7 U	1.67	1.7 U	1.7 U
surfa 1,1,1,2-Tetrachloroethane (ug/kg)	3	0	0						0.068 U	0.076 U	0.073	0.075 U	0.075 U
surfa 1,1,1-Trichloroethane (ug/kg)	3	0	0						0.096 U	0.11 U	0.105	0.11 U	0.11 U
surfa 1,1,2,2-Tetrachloroethane (ug/kg)	3	0	0						0.16 U	0.17 U	0.167	0.17 U	0.17 U
surfa 1,1,2-Trichloroethane (ug/kg)	3	0	0						0.086 U	0.096 U	0.0923	0.095 U	0.095 U
surfa 1,1-Dichloroethane (ug/kg)	3	0	0						0.077 U	0.086 U	0.0827	0.085 U	0.085 U

Table 2. Queried Sediment Chemistry Data for Glacier/Lonestar.

				Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**Number of Samples**	**Number Detected**	**% Detected**	**Minimum**	**Maximum**	**Mean**	**Median**	**95th**	**Minimum**	**Maximum**	**Mean**	**Median**	**95th**
surfa 1,2,3-Trichloropropane (ug/kg)	3	0	0						0.23 U	0.26 U	0.247	0.25 U	0.25 U
surfa 1,2-Dichloroethane (ug/kg)	3	0	0						0.13 U	0.14 U	0.137	0.14 U	0.14 U
surfa 1,2-Dichloropropane (ug/kg)	3	0	0						0.084 U	0.093 U	0.0897	0.092 U	0.092 U
surfa 1,4-Dichloro-trans-2-butene (ug/kg)	3	0	0						0.42 U	0.47 U	0.45	0.46 U	0.46 U
surfa 2-Chloroethyl vinyl ether (ug/kg)	3	0	0						0.19 U	0.22 U	0.207	0.21 U	0.21 U
surfa Acetone (ug/kg)	3	0	0						7.5 U	8.3 U	8	8.2 U	8.2 U
surfa Acrylonitrile (ug/kg)	3	0	0						0.52 U	0.58 U	0.557	0.57 U	0.57 U
surfa Benzene (ug/kg)	3	1	33.3	0.09 J	0.09 J	0.09	0.09 J	0.09 J	0.056 U	0.09 J	0.0693	0.062 U	0.062 U
surfa Bromochloromethane (ug/kg)	3	0	0						0.13 U	0.14 U	0.137	0.14 U	0.14 U
surfa Bromodichloromethane (ug/kg)	3	0	0						0.051 U	0.057 U	0.0547	0.056 U	0.056 U
surfa Bromoform (ug/kg)	3	0	0						0.16 U	0.17 U	0.167	0.17 U	0.17 U
surfa Bromomethane (ug/kg)	3	0	0						0.36 U	0.4 U	0.383	0.39 U	0.39 U
surfa Carbon disulfide (ug/kg)	3	0	0						0.085 U	0.094 U	0.0907	0.093 U	0.093 U
surfa Carbon tetrachloride (ug/kg)	3	0	0						0.063 U	0.071 U	0.068	0.07 U	0.07 U
surfa Chlorobenzene (ug/kg)	3	0	0						0.076 U	0.085 U	0.0817	0.084 U	0.084 U
surfa Chlorodibromomethane (ug/kg)	3	0	0						0.13 U	0.15 U	0.14	0.14 U	0.14 U
surfa Chloroethane (ug/kg)	3	0	0						0.26 U	0.29 U	0.277	0.28 U	0.28 U
surfa Chloroform (ug/kg)	3	0	0						0.1 U	0.12 U	0.11	0.11 U	0.11 U
surfa Chloromethane (ug/kg)	3	0	0						0.095 U	0.11 U	0.105	0.11 U	0.11 U
surfa cis-1,3-Dichloropropene (ug/kg)	3	0	0						0.078 U	0.087 U	0.0837	0.086 U	0.086 U
surfa Dichlorodifluoromethane (ug/kg)	3	0	0						0.075 U	0.083 U	0.08	0.082 U	0.082 U
surfa Ethylbenzene (ug/kg)	3	0	0						0.065 U	0.072 U	0.0693	0.071 U	0.071 U
surfa cis-1,2-Dichloroethene (ug/kg)	3	0	0						0.13 U	0.14 U	0.137	0.14 U	0.14 U
surfa Isopropylbenzene (ug/kg)	3	0	0						0.11 U	0.12 U	0.117	0.12 U	0.12 U
surfa m,p-Xylene (ug/kg)	3	0	0						0.14 U	0.26 U	0.19	0.17 U	0.17 U
surfa Methyl iodide (ug/kg)	3	0	0						0.42 U	0.47 U	0.45	0.46 U	0.46 U
surfa Methyl isobutyl ketone (ug/kg)	3	0	0						0.63 U	0.71 U	0.68	0.7 U	0.7 U
surfa Methyl n-butyl ketone (ug/kg)	3	0	0						4.5 U	5 U	4.8	4.9 U	4.9 U
surfa Methyl tert-butyl ether (ug/kg)	3	0	0						0.09 U	0.1 U	0.0963	0.099 U	0.099 U
surfa Methylene bromide (ug/kg)	3	0	0						0.089 U	0.099 U	0.0953	0.098 U	0.098 U
surfa Methylene chloride (ug/kg)	3	0	0						0.78 U	3.3 U	1.83	1.4 U	1.4 U
surfa o-Xylene (ug/kg)	3	0	0						0.072 U	0.08 U	0.0773	0.08 U	0.08 U
surfa Ethylene dibromide (ug/kg)	3	0	0						0.077 U	0.086 U	0.0827	0.085 U	0.085 U
surfa Styrene (ug/kg)	3	0	0						0.12 U	0.13 U	0.127	0.13 U	0.13 U
surfa Tetrachloroethene (ug/kg)	3	1	33.3	0.27 J	0.27 J	0.27	0.27 J	0.27 J	0.12 U	0.27 J	0.17	0.12 U	0.12 U
surfa Toluene (ug/kg)	3	0	0						0.089 U	0.12 U	0.102	0.098 U	0.098 U
surfa trans-1,2-Dichloroethene (ug/kg)	3	0	0						0.075 U	0.083 U	0.08	0.082 U	0.082 U
surfa trans-1,3-Dichloropropene (ug/kg)	3	0	0						0.082 U	0.092 U	0.0883	0.091 U	0.091 U
surfa Trichloroethene (ug/kg)	3	0	0						0.11 U	0.12 U	0.117	0.12 U	0.12 U
surfa Trichlorofluoromethane (ug/kg)	3	0	0						0.45 U	0.5 U	0.48	0.49 U	0.49 U
surfa Vinyl chloride (ug/kg)	3	0	0						0.18 U	0.2 U	0.193	0.2 U	0.2 U
surfa 1,1-Dichloroethene (ug/kg)	3	0	0						0.11 U	0.12 U	0.117	0.12 U	0.12 U
surfa Xylene (ug/kg)	3	0	0						0.14 UT	0.26 UT	0.19	0.17 UT	0.17 UT
surfa BTEX (ug/kg)	3	1	33.3	0.09 JT	0.09 JT	0.09	0.09 JT	0.09 JT	0.09 JT	0.26 UT	0.163	0.14 UT	0.14 UT

Table 2. Queried Sediment Chemistry Data for Western Electric.

		Number	Number	%	Detected Concentrations					Detected and Nondetected Concentrations				
	Analyte	of Samples	Detected	Detected	Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
subsurface	Aroclor 1016 (ug/kg)	1	0	0						10 U	10 U	10	10 U	10 U
surface	Aroclor 1016 (ug/kg)	2	0	0						1.48 U	10 U	5.74	1.48 U	1.48 U
subsurface	Aroclor 1221 (ug/kg)	1	0	0						20 U	20 U	20	20 U	20 U
surface	Aroclor 1221 (ug/kg)	2	1	50	12.4	12.4	12.4	12.4	12.4	12.4	20 U	16.2	12.4	12.4
subsurface	Aroclor 1232 (ug/kg)	1	0	0						10 U	10 U	10	10 U	10 U
surface	Aroclor 1232 (ug/kg)	2	0	0						2.47 U	11 U	6.74	2.47 U	2.47 U
subsurface	Aroclor 1242 (ug/kg)	1	0	0						10 U	10 U	10	10 U	10 U
surface	Aroclor 1242 (ug/kg)	2	0	0						1.5 U	10 U	5.75	1.5 U	1.5 U
subsurface	Aroclor 1248 (ug/kg)	1	0	0						10 U	10 U	10	10 U	10 U
surface	Aroclor 1248 (ug/kg)	2	0	0						1.93 U	10 U	5.97	1.93 U	1.93 U
subsurface	Aroclor 1254 (ug/kg)	1	0	0						10 U	10 U	10	10 U	10 U
surface	Aroclor 1254 (ug/kg)	2	2	100	6.85	23	14.9	6.85	6.85	6.85	23	14.9	6.85	6.85
subsurface	Aroclor 1260 (ug/kg)	1	0	0						10 U	10 U	10	10 U	10 U
surface	Aroclor 1260 (ug/kg)	2	2	100	8.88	12	10.4	8.88	8.88	8.88	12	10.4	8.88	8.88
surface	Aroclor 1262 (ug/kg)	1	0	0						1.38 U	1.38 U	1.38	1.38 U	1.38 U
surface	Aroclor 1268 (ug/kg)	1	0	0						1.18 UJ	1.18 UJ	1.18	1.18 UJ	1.18 UJ
subsurface	Aroclors (ug/kg)	1	0	0						20 UT	20 UT	20	20 UT	20 UT
surface	Aroclors (ug/kg)	2	2	100	28.1 T	35 T	31.6	28.1 T	28.1 T	28.1 T	35 T	31.6	28.1 T	28.1 T
subsurface	Butyltin ion (ug/kg)	1	0	0						1 U	1 U	1	1 U	1 U
surface	Butyltin ion (ug/kg)	1	1	100	2	2	2	2	2	2	2	2	2	2
subsurface	Dibutyltin ion (ug/kg)	1	1	100	0.5 J	0.5 J	0.5	0.5 J	0.5 J	0.5 J	0.5 J	0.5	0.5 J	0.5 J
surface	Dibutyltin ion (ug/kg)	1	1	100	3	3	3	3	3	3	3	3	3	3
subsurface	Tributyltin ion (ug/kg)	1	0	0						1 U	1 U	1	1 U	1 U
surface	Tributyltin ion (ug/kg)	1	1	100	12	12	12	12	12	12	12	12	12	12
subsurface	Tetrabutyltin (ug/kg)	1	0	0						3 U	3 U	3	3 U	3 U
surface	Tetrabutyltin (ug/kg)	1	0	0						3 U	3 U	3	3 U	3 U
surface	Specific Gravity (NA)	1	1	100	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
subsurface	Total organic carbon (percent)	1	1	100	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
surface	Total organic carbon (percent)	2	2	100	1.1	1.14	1.12	1.1	1.1	1.1	1.14	1.12	1.1	1.1
surface	Total solids (percent)	1	1	100	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9
surface	Dioxin-like PCB congener TCDD toxicity equivalent (pg/g)	1	1	100	0.512 JT	0.512 JT	0.512	0.512 JT	0.512 JT	0.512 JT	0.512 JT	0.512	0.512 JT	0.512 JT
surface	Medium gravel (percent)	1	1	100	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
surface	Fine gravel (percent)	1	1	100	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
surface	Very coarse sand (percent)	1	1	100	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
surface	Coarse sand (percent)	1	1	100	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
surface	Medium sand (percent)	1	1	100	7.54	7.54	7.54	7.54	7.54	7.54	7.54	7.54	7.54	7.54
surface	Fine sand (percent)	1	1	100	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8
surface	Very fine sand (percent)	1	1	100	34.2	34.2	34.2	34.2	34.2	34.2	34.2	34.2	34.2	34.2
surface	Fines (percent)	1	1	100	25.7 T	25.7 T	25.7	25.7 T	25.7 T	25.7 T	25.7 T	25.7	25.7 T	25.7 T
surface	Coarse silt (percent)	1	1	100	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19
surface	Medium silt (percent)	1	1	100	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09
surface	Fine silt (percent)	1	1	100	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66
surface	Very fine silt (percent)	1	1	100	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
surface	8-9 Phi clay (percent)	1	1	100	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
surface	>9 Phi clay (percent)	1	1	100	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26
surface	Aluminum (mg/kg)	1	1	100	25600	25600	25600	25600	25600	25600	25600	25600	25600	25600
subsurface	Lead (mg/kg)	1	1	100	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91
surface	Lead (mg/kg)	2	2	100	15.7	17.9	16.8	15.7	15.7	15.7	17.9	16.8	15.7	15.7
subsurface	Mercury (mg/kg)	1	1	100	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
surface	Mercury (mg/kg)	2	2	100	0.07	0.094	0.082	0.07	0.07	0.07	0.094	0.082	0.07	0.07
subsurface	Nickel (mg/kg)	1	1	100	17	17	17	17	17	17	17	17	17	17
surface	Nickel (mg/kg)	2	2	100	22.5	42.1	32.3	22.5	22.5	22.5	42.1	32.3	22.5	22.5
subsurface	Silver (mg/kg)	1	1	100	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14

Table 2. Queried Sediment Chemistry Data for Western Electric.

	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Silver (mg/kg)	2	2	100	0.154	0.19	0.172	0.154	0.154	0.154	0.19	0.172	0.154	0.154
subsurface	Thallium (mg/kg)	1	1	100	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
surface	Thallium (mg/kg)	1	1	100	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
subsurface	Antimony (mg/kg)	1	1	100	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
surface	Antimony (mg/kg)	2	2	100	0.11 J	0.24	0.175	0.11 J	0.11 J	0.11 J	0.24	0.175	0.11 J	0.11 J
subsurface	Arsenic (mg/kg)	1	1	100	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
surface	Arsenic (mg/kg)	2	2	100	3.04 J	3.8	3.42	3.04 J	3.04 J	3.04 J	3.8	3.42	3.04 J	3.04 J
subsurface	Beryllium (mg/kg)	1	1	100	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
surface	Beryllium (mg/kg)	1	1	100	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
subsurface	Cadmium (mg/kg)	1	1	100	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
surface	Cadmium (mg/kg)	2	2	100	0.2	0.203	0.202	0.2	0.2	0.2	0.203	0.202	0.2	0.2
subsurface	Chromium (mg/kg)	1	1	100	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1
surface	Chromium (mg/kg)	2	2	100	23.2	51.8	37.5	23.2	23.2	23.2	51.8	37.5	23.2	23.2
subsurface	Copper (mg/kg)	1	1	100	30.4	30.4	30.4	30.4	30.4	30.4	30.4	30.4	30.4	30.4
surface	Copper (mg/kg)	2	2	100	28.7	48.7	38.7	28.7	28.7	28.7	48.7	38.7	28.7	28.7
subsurface	Zinc (mg/kg)	1	1	100	54	54	54	54	54	54	54	54	54	54
surface	Zinc (mg/kg)	2	2	100	90.6	105	97.8	90.6	90.6	90.6	105	97.8	90.6	90.6
subsurface	Selenium (mg/kg)	1	0	0						2 U	2 U	2	2 U	2 U
surface	Selenium (mg/kg)	2	1	50	0.12	0.12	0.12	0.12	0.12	0.12	1.95 U	1.04	0.12	0.12
subsurface	Anthracene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Anthracene (ug/kg)	2	2	100	37 J	43	40	37 J	37 J	37 J	43	40	37 J	37 J
subsurface	Pyrene (ug/kg)	1	1	100	4 J	4 J	4	4 J	4 J	4 J	4 J	4	4 J	4 J
surface	Pyrene (ug/kg)	2	2	100	170 J	350	260	170 J	170 J	170 J	350	260	170 J	170 J
subsurface	Total PAHs (ug/kg)	1	1	100	28.6 JT	28.6 JT	28.6	28.6 JT	28.6 JT	28.6 JT	28.6 JT	28.6	28.6 JT	28.6 JT
surface	Total PAHs (ug/kg)	2	2	100	946 JT	2290 T	1620	946 JT	946 JT	946 JT	2290 T	1620	946 JT	946 JT
subsurface	Benzo(g,h,i)perylene (ug/kg)	1	0	0						30 U	30 U	30	30 U	30 U
surface	Benzo(g,h,i)perylene (ug/kg)	2	2	100	20 J	66	43	20 J	20 J	20 J	66	43	20 J	20 J
subsurface	Indeno(1,2,3-cd)pyrene (ug/kg)	1	1	100	1 J	1 J	1	1 J	1 J	1 J	1 J	1	1 J	1 J
surface	Indeno(1,2,3-cd)pyrene (ug/kg)	2	2	100	20 J	64	42	20 J	20 J	20 J	64	42	20 J	20 J
subsurface	Benzo(b)fluoranthene (ug/kg)	1	1	100	2 J	2 J	2	2 J	2 J	2 J	2 J	2	2 J	2 J
surface	Benzo(b)fluoranthene (ug/kg)	2	2	100	75 J	340	208	75 J	75 J	75 J	340	208	75 J	75 J
subsurface	Fluoranthene (ug/kg)	1	1	100	6 J	6 J	6	6 J	6 J	6 J	6 J	6	6 J	6 J
surface	Fluoranthene (ug/kg)	2	2	100	230 J	500	365	230 J	230 J	230 J	500	365	230 J	230 J
subsurface	Benzo(k)fluoranthene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Benzo(k)fluoranthene (ug/kg)	2	2	100	23	94	58.5	23	23	23	94	58.5	23	23
subsurface	Acenaphthylene (ug/kg)	1	1	100	2 J	2 J	2	2 J	2 J	2 J	2 J	2	2 J	2 J
surface	Acenaphthylene (ug/kg)	2	2	100	8.7	10 J	9.35	8.7	8.7	8.7	10 J	9.35	8.7	8.7
subsurface	Chrysene (ug/kg)	1	1	100	2 J	2 J	2	2 J	2 J	2 J	2 J	2	2 J	2 J
surface	Chrysene (ug/kg)	2	2	100	110	340	225	110	110	110	340	225	110	110
subsurface	Benzo(a)pyrene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Benzo(a)pyrene (ug/kg)	2	2	100	40	120	80	40	40	40	120	80	40	40
subsurface	Dibenzo(a,h)anthracene (ug/kg)	1	0	0						30 U	30 U	30	30 U	30 U
surface	Dibenzo(a,h)anthracene (ug/kg)	2	2	100	5 J	22	13.5	5 J	5 J	5 J	22	13.5	5 J	5 J
subsurface	Benzo(a)anthracene (ug/kg)	1	1	100	2 J	2 J	2	2 J	2 J	2 J	2 J	2	2 J	2 J
surface	Benzo(a)anthracene (ug/kg)	2	2	100	100	220	160	100	100	100	220	160	100	100
subsurface	Acenaphthene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Acenaphthene (ug/kg)	2	1	50	4.9	4.9	4.9	4.9	4.9	4.9	15 U	9.95	4.9	4.9
subsurface	Phenanthrene (ug/kg)	1	1	100	5 J	5 J	5	5 J	5 J	5 J	5 J	5	5 J	5 J
surface	Phenanthrene (ug/kg)	2	2	100	90 J	99	94.5	90 J	90 J	90 J	99	94.5	90 J	90 J
subsurface	Fluorene (ug/kg)	1	1	100	0.9 J	0.9 J	0.9	0.9 J	0.9 J	0.9 J	0.9 J	0.9	0.9 J	0.9 J
surface	Fluorene (ug/kg)	2	2	100	10 J	20	15	10 J	10 J	10 J	20	15	10 J	10 J
subsurface	Naphthalene (ug/kg)	1	1	100	3 J	3 J	3	3 J	3 J	3 J	3 J	3	3 J	3 J
surface	Naphthalene (ug/kg)	2	1	50	4 J	4 J	4	4 J	4 J	4 J	4.1 U	4.05	4 J	4 J

Table 2. Queried Sediment Chemistry Data for Western Electric.

		Number	Number	%	Detected Concentrations					Detected and Nondetected Concentrations				
	Analyte	of Samples	Detected	Detected	Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
subsurface	2-Methylnaphthalene (ug/kg)	1	1	100	0.7 J	0.7 J	0.7	0.7 J	0.7 J	0.7 J	0.7 J	0.7	0.7 J	0.7 J
surface	2-Methylnaphthalene (ug/kg)	2	2	100	2 J	3.2	2.6	2 J	2 J	2 J	3.2	2.6	2 J	2 J
subsurface	Benzo(b+k)fluoranthene (ug/kg)	1	1	100	2 T	2 T	2	2 T	2 T	2 T	2 T	2	2 T	2 T
surface	Benzo(b+k)fluoranthene (ug/kg)	1	1	100	98 T	98 T	98	98 T	98 T	98 T	98 T	98	98 T	98 T
subsurface	High Molecular Weight PAH (ug/kg)	1	1	100	17 JT	17 JT	17	17 JT	17 JT	17 JT	17 JT	17	17 JT	17 JT
surface	High Molecular Weight PAH (ug/kg)	2	2	100	793 JT	2120 T	1460	793 JT	793 JT	793 JT	2120 T	1460	793 JT	793 JT
subsurface	Low Molecular Weight PAH (ug/kg)	1	1	100	11.6 JT	11.6 JT	11.6	11.6 JT	11.6 JT	11.6 JT	11.6 JT	11.6	11.6 JT	11.6 JT
surface	Low Molecular Weight PAH (ug/kg)	2	2	100	153 JT	179 T	166	153 JT	153 JT	153 JT	179 T	166	153 JT	153 JT
surface	PCB001 (pg/g)	1	1	100	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
surface	PCB002 (pg/g)	1	1	100	3.41	3.41	3.41	3.41	3.41	3.41	3.41	3.41	3.41	3.41
surface	PCB003 (pg/g)	1	1	100	5.77	5.77	5.77	5.77	5.77	5.77	5.77	5.77	5.77	5.77
surface	PCB004 & 010 (pg/g)	1	1	100	131	131	131	131	131	131	131	131	131	131
surface	PCB005 & 008 (pg/g)	1	1	100	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9
surface	PCB006 (pg/g)	1	1	100	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9
surface	PCB007 & 009 (pg/g)	1	1	100	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
surface	PCB011 (pg/g)	1	1	100	84.5	84.5	84.5	84.5	84.5	84.5	84.5	84.5	84.5	84.5
surface	PCB012 & 013 (pg/g)	1	1	100	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
surface	PCB014 (pg/g)	1	0	0						4.96 U	4.96 U	4.96	4.96 U	4.96 U
surface	PCB015 (pg/g)	1	1	100	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6
surface	PCB016 & 032 (pg/g)	1	1	100	144	144	144	144	144	144	144	144	144	144
surface	PCB017 (pg/g)	1	1	100	423	423	423	423	423	423	423	423	423	423
surface	PCB018 (pg/g)	1	1	100	139	139	139	139	139	139	139	139	139	139
surface	PCB019 (pg/g)	1	1	100	303	303	303	303	303	303	303	303	303	303
surface	PCB020 & 021 & 033 (pg/g)	1	1	100	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2
surface	PCB022 (pg/g)	1	1	100	53.2	53.2	53.2	53.2	53.2	53.2	53.2	53.2	53.2	53.2
surface	PCB023 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB024 & 027 (pg/g)	1	1	100	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1
surface	PCB025 (pg/g)	1	1	100	32.4	32.4	32.4	32.4	32.4	32.4	32.4	32.4	32.4	32.4
surface	PCB026 (pg/g)	1	1	100	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9
surface	PCB028 (pg/g)	1	1	100	185	185	185	185	185	185	185	185	185	185
surface	PCB029 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB030 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB031 (pg/g)	1	1	100	134	134	134	134	134	134	134	134	134	134
surface	PCB034 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB035 (pg/g)	1	1	100	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
surface	PCB036 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB037 (pg/g)	1	1	100	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2
surface	PCB038 (pg/g)	1	1	100	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
surface	PCB039 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB040 (pg/g)	1	1	100	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3
surface	PCB041 & 064 & 071 & 072 (pg/g)	1	1	100	306	306	306	306	306	306	306	306	306	306
surface	PCB042 & 059 (pg/g)	1	1	100	90	90	90	90	90	90	90	90	90	90
surface	PCB043 & 049 (pg/g)	1	1	100	510	510	510	510	510	510	510	510	510	510
surface	PCB044 (pg/g)	1	1	100	291	291	291	291	291	291	291	291	291	291
surface	PCB045 (pg/g)	1	1	100	50.3	50.3	50.3	50.3	50.3	50.3	50.3	50.3	50.3	50.3
surface	PCB046 (pg/g)	1	1	100	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
surface	PCB047 (pg/g)	1	1	100	750	750	750	750	750	750	750	750	750	750
surface	PCB048 & 075 (pg/g)	1	1	100	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2
surface	PCB050 (pg/g)	1	1	100	157	157	157	157	157	157	157	157	157	157
surface	PCB051 (pg/g)	1	1	100	298	298	298	298	298	298	298	298	298	298
surface	PCB052 & 069 (pg/g)	1	1	100	664	664	664	664	664	664	664	664	664	664
surface	PCB053 (pg/g)	1	1	100	329	329	329	329	329	329	329	329	329	329
surface	PCB054 (pg/g)	1	1	100	125	125	125	125	125	125	125	125	125	125

Table 2. Queried Sediment Chemistry Data for Western Electric.

	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	PCB055 (pg/g)	1	1	100	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
surface	PCB056 & 060 (pg/g)	1	1	100	120	120	120	120	120	120	120	120	120	120
surface	PCB057 (pg/g)	1	1	100	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65
surface	PCB058 (pg/g)	1	1	100	6.48	6.48	6.48	6.48	6.48	6.48	6.48	6.48	6.48	6.48
surface	PCB061 & 070 (pg/g)	1	1	100	284	284	284	284	284	284	284	284	284	284
surface	PCB062 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB063 (pg/g)	1	1	100	8.48	8.48	8.48	8.48	8.48	8.48	8.48	8.48	8.48	8.48
surface	PCB065 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB066 & 076 (pg/g)	1	1	100	213	213	213	213	213	213	213	213	213	213
surface	PCB067 (pg/g)	1	1	100	6.43	6.43	6.43	6.43	6.43	6.43	6.43	6.43	6.43	6.43
surface	PCB068 (pg/g)	1	1	100	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
surface	PCB073 (pg/g)	1	1	100	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6
surface	PCB074 (pg/g)	1	1	100	94.7	94.7	94.7	94.7	94.7	94.7	94.7	94.7	94.7	94.7
surface	PCB077 (pg/g)	1	1	100	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
surface	PCB078 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB079 (pg/g)	1	1	100	7.02	7.02	7.02	7.02	7.02	7.02	7.02	7.02	7.02	7.02
surface	PCB080 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB081 (pg/g)	1	1	100	1.2 J	1.2 J	1.2	1.2 J	1.2 J	1.2 J	1.2 J	1.2	1.2 J	1.2 J
surface	PCB082 (pg/g)	1	1	100	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
surface	PCB083 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB084 & 092 (pg/g)	1	1	100	330	330	330	330	330	330	330	330	330	330
surface	PCB085 & 116 (pg/g)	1	1	100	78.7	78.7	78.7	78.7	78.7	78.7	78.7	78.7	78.7	78.7
surface	PCB086 (pg/g)	1	1	100	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
surface	PCB087 & 117 & 125 (pg/g)	1	1	100	209	209	209	209	209	209	209	209	209	209
surface	PCB088 & 091 (pg/g)	1	1	100	338	338	338	338	338	338	338	338	338	338
surface	PCB089 (pg/g)	1	1	100	10	10	10	10	10	10	10	10	10	10
surface	PCB090 & 101 (pg/g)	1	1	100	834	834	834	834	834	834	834	834	834	834
surface	PCB093 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB094 (pg/g)	1	1	100	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
surface	PCB095 & 098 & 102 (pg/g)	1	1	100	988	988	988	988	988	988	988	988	988	988
surface	PCB096 (pg/g)	1	1	100	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5
surface	PCB097 (pg/g)	1	1	100	155	155	155	155	155	155	155	155	155	155
surface	PCB099 (pg/g)	1	1	100	337	337	337	337	337	337	337	337	337	337
surface	PCB100 (pg/g)	1	1	100	270	270	270	270	270	270	270	270	270	270
surface	PCB103 (pg/g)	1	1	100	242	242	242	242	242	242	242	242	242	242
surface	PCB104 (pg/g)	1	1	100	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2
surface	PCB105 (pg/g)	1	1	100	165	165	165	165	165	165	165	165	165	165
surface	PCB106 & 118 (pg/g)	1	1	100	453	453	453	453	453	453	453	453	453	453
surface	PCB107 & 109 (pg/g)	1	1	100	45.9	45.9	45.9	45.9	45.9	45.9	45.9	45.9	45.9	45.9
surface	PCB108 & 112 (pg/g)	1	1	100	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3
surface	PCB110 (pg/g)	1	1	100	820	820	820	820	820	820	820	820	820	820
surface	PCB111 & 115 (pg/g)	1	1	100	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71
surface	PCB113 (pg/g)	1	1	100	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
surface	PCB114 (pg/g)	1	1	100	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45
surface	PCB119 (pg/g)	1	1	100	104	104	104	104	104	104	104	104	104	104
surface	PCB120 (pg/g)	1	1	100	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75
surface	PCB121 (pg/g)	1	1	100	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
surface	PCB122 (pg/g)	1	1	100	6.12	6.12	6.12	6.12	6.12	6.12	6.12	6.12	6.12	6.12
surface	PCB123 (pg/g)	1	1	100	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84
surface	PCB124 (pg/g)	1	1	100	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
surface	PCB126 (pg/g)	1	1	100	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93
surface	PCB127 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB128 & 162 (pg/g)	1	1	100	130	130	130	130	130	130	130	130	130	130

Table 2. Queried Sediment Chemistry Data for Western Electric.

	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	PCB129 (pg/g)	1	1	100	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7
surface	PCB130 (pg/g)	1	1	100	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2
surface	PCB131 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB132 & 161 (pg/g)	1	1	100	361	361	361	361	361	361	361	361	361	361
surface	PCB133 & 142 (pg/g)	1	1	100	78	78	78	78	78	78	78	78	78	78
surface	PCB134 & 143 (pg/g)	1	1	100	64.7	64.7	64.7	64.7	64.7	64.7	64.7	64.7	64.7	64.7
surface	PCB135 (pg/g)	1	1	100	210	210	210	210	210	210	210	210	210	210
surface	PCB136 (pg/g)	1	1	100	403	403	403	403	403	403	403	403	403	403
surface	PCB137 (pg/g)	1	1	100	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5
surface	PCB138 & 163 & 164 (pg/g)	1	1	100	1410	1410	1410	1410	1410	1410	1410	1410	1410	1410
surface	PCB139 & 149 (pg/g)	1	1	100	1510	1510	1510	1510	1510	1510	1510	1510	1510	1510
surface	PCB140 (pg/g)	1	1	100	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9
surface	PCB141 (pg/g)	1	1	100	216	216	216	216	216	216	216	216	216	216
surface	PCB144 (pg/g)	1	1	100	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8
surface	PCB145 (pg/g)	1	1	100	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57
surface	PCB146 & 165 (pg/g)	1	1	100	328	328	328	328	328	328	328	328	328	328
surface	PCB147 (pg/g)	1	1	100	345	345	345	345	345	345	345	345	345	345
surface	PCB148 (pg/g)	1	1	100	63.3	63.3	63.3	63.3	63.3	63.3	63.3	63.3	63.3	63.3
surface	PCB150 (pg/g)	1	1	100	59.3	59.3	59.3	59.3	59.3	59.3	59.3	59.3	59.3	59.3
surface	PCB151 (pg/g)	1	1	100	429	429	429	429	429	429	429	429	429	429
surface	PCB152 (pg/g)	1	1	100	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1
surface	PCB153 (pg/g)	1	1	100	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
surface	PCB154 (pg/g)	1	1	100	194	194	194	194	194	194	194	194	194	194
surface	PCB155 (pg/g)	1	1	100	9.63	9.63	9.63	9.63	9.63	9.63	9.63	9.63	9.63	9.63
surface	PCB156 (pg/g)	1	1	100	72.3	72.3	72.3	72.3	72.3	72.3	72.3	72.3	72.3	72.3
surface	PCB157 (pg/g)	1	1	100	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2
surface	PCB158 & 160 (pg/g)	1	1	100	105	105	105	105	105	105	105	105	105	105
surface	PCB159 (pg/g)	1	1	100	94.5	94.5	94.5	94.5	94.5	94.5	94.5	94.5	94.5	94.5
surface	PCB166 (pg/g)	1	1	100	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49
surface	PCB167 (pg/g)	1	1	100	34.2	34.2	34.2	34.2	34.2	34.2	34.2	34.2	34.2	34.2
surface	PCB168 (pg/g)	1	1	100	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65
surface	PCB169 (pg/g)	1	0	0						0.648 U	0.648 U	0.648	0.648 U	0.648 U
surface	PCB170 (pg/g)	1	1	100	335	335	335	335	335	335	335	335	335	335
surface	PCB171 (pg/g)	1	1	100	127	127	127	127	127	127	127	127	127	127
surface	PCB172 (pg/g)	1	1	100	99	99	99	99	99	99	99	99	99	99
surface	PCB173 (pg/g)	1	1	100	8.42	8.42	8.42	8.42	8.42	8.42	8.42	8.42	8.42	8.42
surface	PCB174 (pg/g)	1	1	100	464	464	464	464	464	464	464	464	464	464
surface	PCB175 (pg/g)	1	1	100	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1
surface	PCB176 (pg/g)	1	1	100	148	148	148	148	148	148	148	148	148	148
surface	PCB177 (pg/g)	1	1	100	677	677	677	677	677	677	677	677	677	677
surface	PCB178 (pg/g)	1	1	100	532	532	532	532	532	532	532	532	532	532
surface	PCB179 (pg/g)	1	1	100	537	537	537	537	537	537	537	537	537	537
surface	PCB180 (pg/g)	1	1	100	913	913	913	913	913	913	913	913	913	913
surface	PCB181 (pg/g)	1	1	100	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95
surface	PCB182 & 187 (pg/g)	1	1	100	3070	3070	3070	3070	3070	3070	3070	3070	3070	3070
surface	PCB183 (pg/g)	1	1	100	244	244	244	244	244	244	244	244	244	244
surface	PCB184 (pg/g)	1	1	100	7.17	7.17	7.17	7.17	7.17	7.17	7.17	7.17	7.17	7.17
surface	PCB185 (pg/g)	1	1	100	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1
surface	PCB186 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB188 (pg/g)	1	1	100	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7
surface	PCB189 (pg/g)	1	1	100	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
surface	PCB190 (pg/g)	1	1	100	69.9	69.9	69.9	69.9	69.9	69.9	69.9	69.9	69.9	69.9
surface	PCB191 (pg/g)	1	1	100	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1

Table 2. Queried Sediment Chemistry Data for Western Electric.

	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	PCB192 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB193 (pg/g)	1	1	100	202	202	202	202	202	202	202	202	202	202
surface	PCB194 (pg/g)	1	1	100	676	676	676	676	676	676	676	676	676	676
surface	PCB195 (pg/g)	1	1	100	254	254	254	254	254	254	254	254	254	254
surface	PCB196 & 203 (pg/g)	1	1	100	747	747	747	747	747	747	747	747	747	747
surface	PCB197 (pg/g)	1	1	100	86.1	86.1	86.1	86.1	86.1	86.1	86.1	86.1	86.1	86.1
surface	PCB198 (pg/g)	1	1	100	27.7	27.7	27.7	27.7	27.7	27.7	27.7	27.7	27.7	27.7
surface	PCB199 (pg/g)	1	1	100	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120
surface	PCB200 (pg/g)	1	1	100	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4
surface	PCB201 (pg/g)	1	1	100	255	255	255	255	255	255	255	255	255	255
surface	PCB202 (pg/g)	1	1	100	312	312	312	312	312	312	312	312	312	312
surface	PCB204 (pg/g)	1	0	0						2.48 U	2.48 U	2.48	2.48 U	2.48 U
surface	PCB205 (pg/g)	1	1	100	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9
surface	PCB206 (pg/g)	1	1	100	381	381	381	381	381	381	381	381	381	381
surface	PCB207 (pg/g)	1	1	100	51.8	51.8	51.8	51.8	51.8	51.8	51.8	51.8	51.8	51.8
surface	PCB208 (pg/g)	1	1	100	64.9	64.9	64.9	64.9	64.9	64.9	64.9	64.9	64.9	64.9
surface	PCB209 (pg/g)	1	1	100	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1
surface	Total PCB Congeners (pg/g)	1	1	100	32200 T	32200 T	32200	32200 T	32200 T	32200 T	32200 T	32200	32200 T	32200 T
surface	Monochlorobiphenyl homologs (pg/g)	1	1	100	19.8 T	19.8 T	19.8	19.8 T	19.8 T	19.8 T	19.8 T	19.8	19.8 T	19.8 T
surface	Dichlorobiphenyl homologs (pg/g)	1	1	100	388 T	388 T	388	388 T	388 T	388 T	388 T	388	388 T	388 T
surface	Trichlorobiphenyl homologs (pg/g)	1	1	100	1650 T	1650 T	1650	1650 T	1650 T	1650 T	1650 T	1650	1650 T	1650 T
surface	Tetrachlorobiphenyl homologs (pg/g)	1	1	100	4530 T	4530 T	4530	4530 T	4530 T	4530 T	4530 T	4530	4530 T	4530 T
surface	Pentachlorobiphenyl homologs (pg/g)	1	1	100	5700 T	5700 T	5700	5700 T	5700 T	5700 T	5700 T	5700	5700 T	5700 T
surface	Hexachlorobiphenyl homologs (pg/g)	1	1	100	8220 T	8220 T	8220	8220 T	8220 T	8220 T	8220 T	8220	8220 T	8220 T
surface	Heptachlorobiphenyl homologs (pg/g)	1	1	100	7570 T	7570 T	7570	7570 T	7570 T	7570 T	7570 T	7570	7570 T	7570 T
surface	Octachlorobiphenyl homologs (pg/g)	1	1	100	3580 T	3580 T	3580	3580 T	3580 T	3580 T	3580 T	3580	3580 T	3580 T
surface	Nonachlorobiphenyl homologs (pg/g)	1	1	100	497 T	497 T	497	497 T	497 T	497 T	497 T	497	497 T	497 T
surface	Heptachlor epoxide (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	Endosulfan sulfate (ug/kg)	1	0	0						0.598 UJ	0.598 UJ	0.598	0.598 UJ	0.598 UJ
surface	Mirex (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	Oxychlordane (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	Aldrin (ug/kg)	1	0	0						0.598 UJ	0.598 UJ	0.598	0.598 UJ	0.598 UJ
surface	alpha-Hexachlorocyclohexane (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	beta-Hexachlorocyclohexane (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	delta-Hexachlorocyclohexane (ug/kg)	1	0	0						0.598 UJ	0.598 UJ	0.598	0.598 UJ	0.598 UJ
surface	beta-Endosulfan (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	2,4'-DDE (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	trans-Nonachlor (ug/kg)	1	1	100	0.248 NJ	0.248 NJ	0.248	0.248 NJ	0.248 NJ	0.248 NJ	0.248 NJ	0.248	0.248 NJ	0.248 NJ
surface	4,4'-DDT (ug/kg)	1	0	0						3.02 U	3.02 U	3.02	3.02 U	3.02 U
surface	cis-Chlordane (ug/kg)	1	1	100	0.463 J	0.463 J	0.463	0.463 J	0.463 J	0.463 J	0.463 J	0.463	0.463 J	0.463 J
surface	cis-Nonachlor (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	trans-Chlordane (ug/kg)	1	1	100	0.798 NJ	0.798 NJ	0.798	0.798 NJ	0.798 NJ	0.798 NJ	0.798 NJ	0.798	0.798 NJ	0.798 NJ
surface	2,4'-DDD (ug/kg)	1	1	100	3.28 J	3.28 J	3.28	3.28 J	3.28 J	3.28 J	3.28 J	3.28	3.28 J	3.28 J
surface	Endrin ketone (ug/kg)	1	1	100	1.7 NJ	1.7 NJ	1.7	1.7 NJ	1.7 NJ	1.7 NJ	1.7 NJ	1.7	1.7 NJ	1.7 NJ
surface	gamma-Hexachlorocyclohexane (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	Dieldrin (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	Methoxychlor (ug/kg)	1	1	100	3.46 J	3.46 J	3.46	3.46 J	3.46 J	3.46 J	3.46 J	3.46	3.46 J	3.46 J
surface	4,4'-DDD (ug/kg)	1	1	100	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
surface	4,4'-DDE (ug/kg)	1	1	100	1.31 J	1.31 J	1.31	1.31 J	1.31 J	1.31 J	1.31 J	1.31	1.31 J	1.31 J
surface	Endrin aldehyde (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	Heptachlor (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	2,4'-DDT (ug/kg)	1	1	100	1.6 J	1.6 J	1.6	1.6 J	1.6 J	1.6 J	1.6 J	1.6	1.6 J	1.6 J
surface	Toxaphene (ug/kg)	1	0	0						74.8 U	74.8 U	74.8	74.8 U	74.8 U

Table 2. Queried Sediment Chemistry Data for Western Electric.

		Number	Number	%	Detected Concentrations					Detected and Nondetected Concentrations				
	Analyte	of Samples	Detected	Detected	Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	alpha-Endosulfan (ug/kg)	1	0	0						0.598 U	0.598 U	0.598	0.598 U	0.598 U
surface	Total of 2,4' and 4,4'-DDD (ug/kg)	1	1	100	4.28 JT	4.28 JT	4.28	4.28 JT	4.28 JT	4.28 JT	4.28 JT	4.28	4.28 JT	4.28 JT
surface	Total of 2,4' and 4,4'-DDE (ug/kg)	1	1	100	1.31 JT	1.31 JT	1.31	1.31 JT	1.31 JT	1.31 JT	1.31 JT	1.31	1.31 JT	1.31 JT
surface	Total of 2,4' and 4,4'-DDT (ug/kg)	1	1	100	1.6 JT	1.6 JT	1.6	1.6 JT	1.6 JT	1.6 JT	1.6 JT	1.6	1.6 JT	1.6 JT
surface	Total of 2,4' and 4,4'-DDD, -DDE, -DDT (ug/kg)	1	1	100	7.19 JT	7.19 JT	7.19	7.19 JT	7.19 JT	7.19 JT	7.19 JT	7.19	7.19 JT	7.19 JT
surface	Total of 4,4'-DDD, -DDE, -DDT (ug/kg)	1	1	100	2.31 JT	2.31 JT	2.31	2.31 JT	2.31 JT	2.31 JT	2.31 JT	2.31	2.31 JT	2.31 JT
surface	Total Chlordanes (ug/kg)	1	1	100	1.51 JT	1.51 JT	1.51	1.51 JT	1.51 JT	1.51 JT	1.51 JT	1.51	1.51 JT	1.51 JT
surface	Total Endosulfan (ug/kg)	1	0	0						0.598 UJT	0.598 UJT	0.598	0.598 UJT	0.598 UJT
subsurface	Diesel Range Hydrocarbons (mg/kg)	1	1	100	40 J	40 J	40	40 J	40 J	40 J	40 J	40	40 J	40 J
surface	Diesel Range Hydrocarbons (mg/kg)	1	1	100	80	80	80	80	80	80	80	80	80	80
subsurface	Gasoline Range Hydrocarbons (mg/kg)	1	0	0						72 U	72 U	72	72 U	72 U
surface	Gasoline Range Hydrocarbons (mg/kg)	1	0	0						61 U	61 U	61	61 U	61 U
subsurface	Residual Range Hydrocarbons (mg/kg)	1	1	100	100 J	100 J	100	100 J	100 J	100 J	100 J	100	100 J	100 J
surface	Residual Range Hydrocarbons (mg/kg)	1	1	100	300 J	300 J	300	300 J	300 J	300 J	300 J	300	300 J	300 J
subsurface	Total Petroleum Hydrocarbons (mg/kg)	1	1	100	140 JT	140 JT	140	140 JT	140 JT	140 JT	140 JT	140	140 JT	140 JT
surface	Total Petroleum Hydrocarbons (mg/kg)	1	1	100	380 JT	380 JT	380	380 JT	380 JT	380 JT	380 JT	380	380 JT	380 JT
surface	2,3,4,6;2,3,5,6-Tetrachlorophenol coelution (ug/kg)	1	0	0						3 U	3 U	3	3 U	3 U
subsurface	2,4,5-Trichlorophenol (ug/kg)	1	0	0						74 U	74 U	74	74 U	74 U
surface	2,4,5-Trichlorophenol (ug/kg)	2	0	0						2.4 U	74 U	38.2	2.4 U	2.4 U
subsurface	2,4,6-Trichlorophenol (ug/kg)	1	0	0						74 U	74 U	74	74 U	74 U
surface	2,4,6-Trichlorophenol (ug/kg)	2	0	0						3 U	74 U	38.5	3 U	3 U
subsurface	2,4-Dichlorophenol (ug/kg)	1	0	0						150 U	150 U	150	150 U	150 U
surface	2,4-Dichlorophenol (ug/kg)	2	0	0						3 UJ	150 U	76.5	3 UJ	3 UJ
subsurface	2,4-Dimethylphenol (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
surface	2,4-Dimethylphenol (ug/kg)	2	0	0						9 UJ	300 U	155	9 UJ	9 UJ
subsurface	2,4-Dinitrophenol (ug/kg)	1	0	0						450 U	450 U	450	450 U	450 U
surface	2,4-Dinitrophenol (ug/kg)	2	0	0						59 UJ	440 U	250	59 UJ	59 UJ
subsurface	2-Chlorophenol (ug/kg)	1	0	0						74 U	74 U	74	74 U	74 U
surface	2-Chlorophenol (ug/kg)	2	0	0						2.8 UJ	74 U	38.4	2.8 UJ	2.8 UJ
subsurface	2-Methylphenol (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
surface	2-Methylphenol (ug/kg)	2	0	0						5.6 UJ	300 U	153	5.6 UJ	5.6 UJ
subsurface	2-Nitrophenol (ug/kg)	1	0	0						74 U	74 U	74	74 U	74 U
surface	2-Nitrophenol (ug/kg)	2	0	0						4.3 UJ	74 U	39.2	4.3 UJ	4.3 UJ
subsurface	4,6-Dinitro-2-methylphenol (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
surface	4,6-Dinitro-2-methylphenol (ug/kg)	2	0	0						2.8 UJ	300 U	151	2.8 UJ	2.8 UJ
subsurface	4-Chloro-3-methylphenol (ug/kg)	1	0	0						74 U	74 U	74	74 U	74 U
surface	4-Chloro-3-methylphenol (ug/kg)	2	1	50	4.3 J	4.3 J	4.3	4.3 J	4.3 J	4.3 J	74 U	39.2	4.3 J	4.3 J
surface	4-Methylphenol (ug/kg)	1	0	0						4.8 UJ	4.8 UJ	4.8	4.8 UJ	4.8 UJ
subsurface	4-Nitrophenol (ug/kg)	1	0	0						150 U	150 U	150	150 U	150 U
surface	4-Nitrophenol (ug/kg)	2	0	0						49 UJ	150 U	99.5	49 UJ	49 UJ
subsurface	Pentachlorophenol (ug/kg)	1	0	0						450 U	450 U	450	450 U	450 U
surface	Pentachlorophenol (ug/kg)	2	1	50	8.7 J	8.7 J	8.7	8.7 J	8.7 J	8.7 J	440 U	224	8.7 J	8.7 J
subsurface	Phenol (ug/kg)	1	1	100	7 J	7 J	7	7 J	7 J	7 J	7 J	7	7 J	7 J
surface	Phenol (ug/kg)	2	1	50	10 J	10 J	10	10 J	10 J	6.3 UJ	10 J	8.15	6.3 UJ	6.3 UJ
surface	2,3,4,5-Tetrachlorophenol (ug/kg)	1	0	0						4.8 U	4.8 U	4.8	4.8 U	4.8 U
subsurface	3- and 4-Methylphenol Coelution (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
surface	3- and 4-Methylphenol Coelution (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
subsurface	Dimethyl phthalate (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Dimethyl phthalate (ug/kg)	2	0	0						3 UJ	15 U	9	3 UJ	3 UJ
subsurface	Diethyl phthalate (ug/kg)	1	1	100	6 J	6 J	6	6 J	6 J	6 J	6 J	6	6 J	6 J
surface	Diethyl phthalate (ug/kg)	2	1	50	7 J	7 J	7	7 J	7 J	5.8 UJ	7 J	6.4	5.8 UJ	5.8 UJ
subsurface	Dibutyl phthalate (ug/kg)	1	0	0						30 U	30 U	30	30 U	30 U
surface	Dibutyl phthalate (ug/kg)	2	1	50	6.4 J	6.4 J	6.4	6.4 J	6.4 J	6.4 J	30 U	18.2	6.4 J	6.4 J

Table 2. Queried Sediment Chemistry Data for Western Electric.

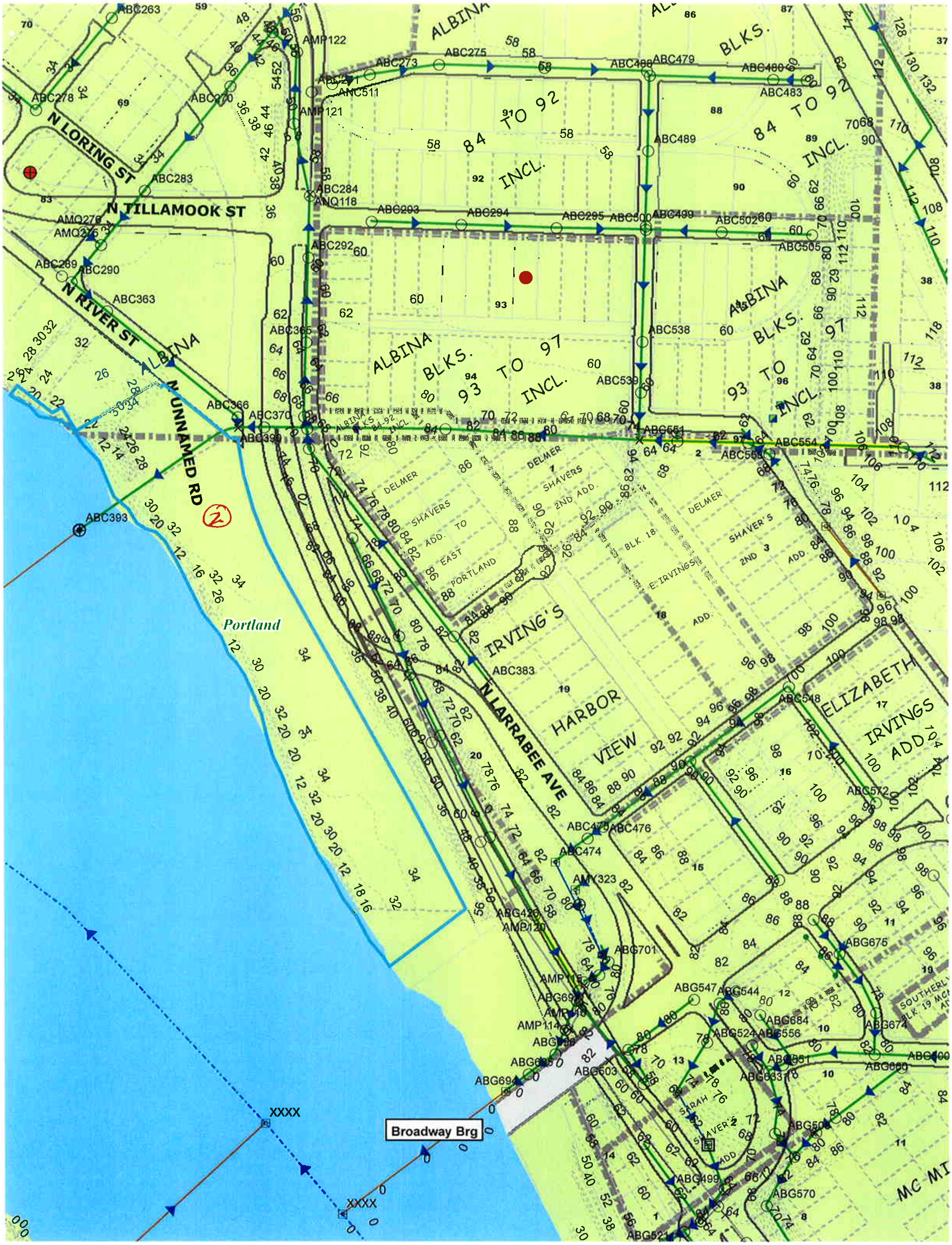
	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
subsurface	Butylbenzyl phthalate (ug/kg)	1	1	100	2 J	2 J	2	2 J	2 J	2 J	2 J	2	2 J	2 J
surface	Butylbenzyl phthalate (ug/kg)	2	1	50	5 J	5 J	5	5 J	5 J	2.5 UJ	5 J	3.75	2.5 UJ	2.5 UJ
subsurface	Di-n-octyl phthalate (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
surface	Di-n-octyl phthalate (ug/kg)	2	0	0						2 UJ	300 U	151	2 UJ	2 UJ
subsurface	Bis(2-ethylhexyl) phthalate (ug/kg)	1	1	100	20 J	20 J	20	20 J	20 J	20 J	20 J	20	20 J	20 J
surface	Bis(2-ethylhexyl) phthalate (ug/kg)	2	1	50	100 J	100 J	100	100 J	100 J	100 J	170 UJ	135	100 J	100 J
subsurface	1,2,4-Trichlorobenzene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	1,2,4-Trichlorobenzene (ug/kg)	2	0	0						2.5 UJ	15 U	8.75	2.5 UJ	2.5 UJ
subsurface	1,2-Dichlorobenzene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	1,2-Dichlorobenzene (ug/kg)	2	0	0						2.2 UJ	15 U	8.6	2.2 UJ	2.2 UJ
subsurface	1,3-Dichlorobenzene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	1,3-Dichlorobenzene (ug/kg)	2	0	0						2.7 UJ	15 U	8.85	2.7 UJ	2.7 UJ
subsurface	1,4-Dichlorobenzene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	1,4-Dichlorobenzene (ug/kg)	2	0	0						3.1 UJ	15 U	9.05	3.1 UJ	3.1 UJ
surface	Azobenzene (ug/kg)	1	0	0						4 UJ	4 UJ	4	4 UJ	4 UJ
subsurface	2,4-Dinitrotoluene (ug/kg)	1	0	0						74 U	74 U	74	74 U	74 U
surface	2,4-Dinitrotoluene (ug/kg)	2	0	0						4.6 UJ	74 U	39.3	4.6 UJ	4.6 UJ
subsurface	2,6-Dinitrotoluene (ug/kg)	1	0	0						30 U	30 U	30	30 U	30 U
surface	2,6-Dinitrotoluene (ug/kg)	2	0	0						4.6 UJ	30 U	17.3	4.6 UJ	4.6 UJ
subsurface	2-Chloronaphthalene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	2-Chloronaphthalene (ug/kg)	2	0	0						5.9 UJ	15 U	10.5	5.9 UJ	5.9 UJ
subsurface	2-Nitroaniline (ug/kg)	1	0	0						30 U	30 U	30	30 U	30 U
surface	2-Nitroaniline (ug/kg)	2	0	0						4.5 UJ	30 U	17.3	4.5 UJ	4.5 UJ
subsurface	3,3'-Dichlorobenzidine (ug/kg)	1	0	0						200 U	200 U	200	200 U	200 U
surface	3,3'-Dichlorobenzidine (ug/kg)	2	0	0						6.1 UJ	100 U	53.1	6.1 UJ	6.1 UJ
subsurface	3-Nitroaniline (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
surface	3-Nitroaniline (ug/kg)	2	0	0						4.3 UJ	300 U	152	4.3 UJ	4.3 UJ
subsurface	4-Bromophenyl phenyl ether (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	4-Bromophenyl phenyl ether (ug/kg)	2	0	0						2.3 UJ	15 U	8.65	2.3 UJ	2.3 UJ
subsurface	4-Chloroaniline (ug/kg)	1	1	100	4 J	4 J	4	4 J	4 J	4 J	4 J	4	4 J	4 J
surface	4-Chloroaniline (ug/kg)	2	0	0						3.5 UJ	74 U	38.8	3.5 UJ	3.5 UJ
subsurface	4-Chlorophenyl phenyl ether (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	4-Chlorophenyl phenyl ether (ug/kg)	2	0	0						3.3 UJ	15 U	9.15	3.3 UJ	3.3 UJ
subsurface	4-Nitroaniline (ug/kg)	1	0	0						150 U	150 U	150	150 U	150 U
surface	4-Nitroaniline (ug/kg)	2	0	0						5.6 UJ	150 U	77.8	5.6 UJ	5.6 UJ
surface	Aniline (ug/kg)	1	0	0						2.5 UJ	2.5 UJ	2.5	2.5 UJ	2.5 UJ
subsurface	Benzoic acid (ug/kg)	1	0	0						590 U	590 U	590	590 U	590 U
surface	Benzoic acid (ug/kg)	2	1	50	60 J	60 J	60	60 J	60 J	60 J	160 UJ	110	60 J	60 J
subsurface	Benzyl alcohol (ug/kg)	1	0	0						74 U	74 U	74	74 U	74 U
surface	Benzyl alcohol (ug/kg)	2	0	0						6.1 UJ	74 U	40.1	6.1 UJ	6.1 UJ
subsurface	Bis(2-chloroethoxy) methane (ug/kg)	1	0	0						30 U	30 U	30	30 U	30 U
surface	Bis(2-chloroethoxy) methane (ug/kg)	2	0	0						2.2 UJ	30 U	16.1	2.2 UJ	2.2 UJ
subsurface	Bis(2-chloroethyl) ether (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Bis(2-chloroethyl) ether (ug/kg)	2	0	0						4 UJ	15 U	9.5	4 UJ	4 UJ
subsurface	Carbazole (ug/kg)	1	1	100	0.6 J	0.6 J	0.6	0.6 J	0.6 J	0.6 J	0.6 J	0.6	0.6 J	0.6 J
surface	Carbazole (ug/kg)	2	2	100	5 J	17 J	11	5 J	5 J	5 J	17 J	11	5 J	5 J
subsurface	Dibenzofuran (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Dibenzofuran (ug/kg)	2	2	100	3 J	8.2	5.6	3 J	3 J	3 J	8.2	5.6	3 J	3 J
subsurface	Hexachlorobenzene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Hexachlorobenzene (ug/kg)	2	1	50	4.84	4.84	4.84	4.84	4.84	4.84	15 U	9.92	4.84	4.84
subsurface	Hexachlorobutadiene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Hexachlorobutadiene (ug/kg)	2	0	0						0.598 UJ	15 U	7.8	0.598 UJ	0.598 UJ
subsurface	Hexachlorocyclopentadiene (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U

Table 2. Queried Sediment Chemistry Data for Western Electric.

		Number	Number	%	Detected Concentrations					Detected and Nondetected Concentrations				
	Analyte	**of Samples**	**Detected**	**Detected**	**Minimum**	**Maximum**	**Mean**	**Median**	**95th**	**Minimum**	**Maximum**	**Mean**	**Median**	**95th**
surface	Hexachlorocyclopentadiene (ug/kg)	2	0	0						25 UJ	300 U	163	25 UJ	25 UJ
subsurface	Hexachloroethane (ug/kg)	1	0	0						59 U	59 U	59	59 U	59 U
surface	Hexachloroethane (ug/kg)	2	0	0						0.598 UJ	59 U	29.8	0.598 UJ	0.598 UJ
subsurface	Isophorone (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Isophorone (ug/kg)	2	0	0						2.7 UJ	15 U	8.85	2.7 UJ	2.7 UJ
subsurface	Nitrobenzene (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Nitrobenzene (ug/kg)	2	0	0						3.3 UJ	15 U	9.15	3.3 UJ	3.3 UJ
surface	N-Nitrosodimethylamine (ug/kg)	1	0	0						10 UJ	10 UJ	10	10 UJ	10 UJ
subsurface	N-Nitrosodipropylamine (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	N-Nitrosodipropylamine (ug/kg)	2	0	0						5.3 UJ	15 U	10.2	5.3 UJ	5.3 UJ
subsurface	N-Nitrosodiphenylamine (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	N-Nitrosodiphenylamine (ug/kg)	2	0	0						3.6 UJ	15 U	9.3	3.6 UJ	3.6 UJ
subsurface	Bis(2-chloroisopropyl) ether (ug/kg)	1	0	0						15 U	15 U	15	15 U	15 U
surface	Bis(2-chloroisopropyl) ether (ug/kg)	2	0	0						2 UJ	15 U	8.5	2 UJ	2 UJ

ATTACHMENTS

ATTACHMENT 1



N LORING ST
N TILLAMOOK ST
N RIVER ST
N UNNAMED RD
N LARRABEE AVE
ALBINA BLKS. 84 TO 92 INCL.
ALBINA BLKS. 93 TO 97 INCL.
DELMER SHAVERS ADD. TO EAST PORTLAND
DELMER SHAVERS 2ND ADD.
DELMER SHAVER'S 2ND ADD.
E. IRVINGS ADD.
IRVING'S HARBOR VIEW
ELIZABETH IRVINGS ADD
Portland
Broadway Brg

800 N RIVER ST **01-146685-000-00-UC** **BES - Sewer Connection Plumb**

Commercial/New Connection — Recd: 07/02/01

800 RIVER ST — Issued: 07/03/01

Storm Connection Only: 282' of 14" vsp public storm sewer located in N Albina Ave, contractor to excavate and prepare shoring as required, B.O.M. to install tap into main, contractor to prepare

R941270390 **1N1E27CD 00500**

Addition SECTION 27 1 N 1 E

Lot/Blk1/Legal TL 500 6.52 ACRES

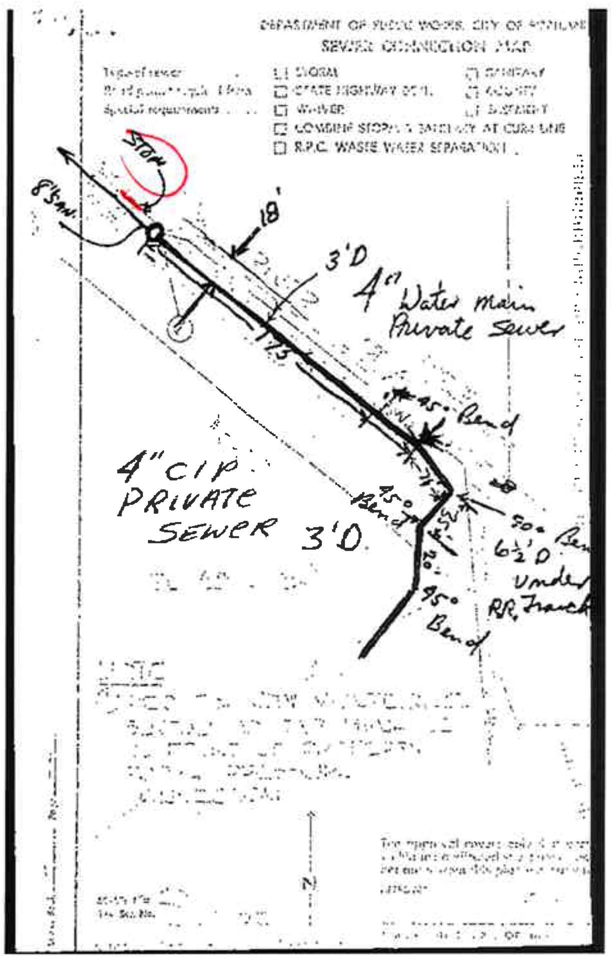
Applicant		***Contractor - Electrical***	
DILWORTH & SONS LLC		DILWORTH & SONS LLC	
19493 S RAMSEY RD		19493 S RAMSEY RD	
MOLLALA OR 97038		MOLLALA OR 97038	
Work	5038296389	Work	5038296389
Home	503	Home	503

Owner
CARGILL INC
P O BOX 5626
MINNEAPOLIS, MN 55440-5626

Project Details:

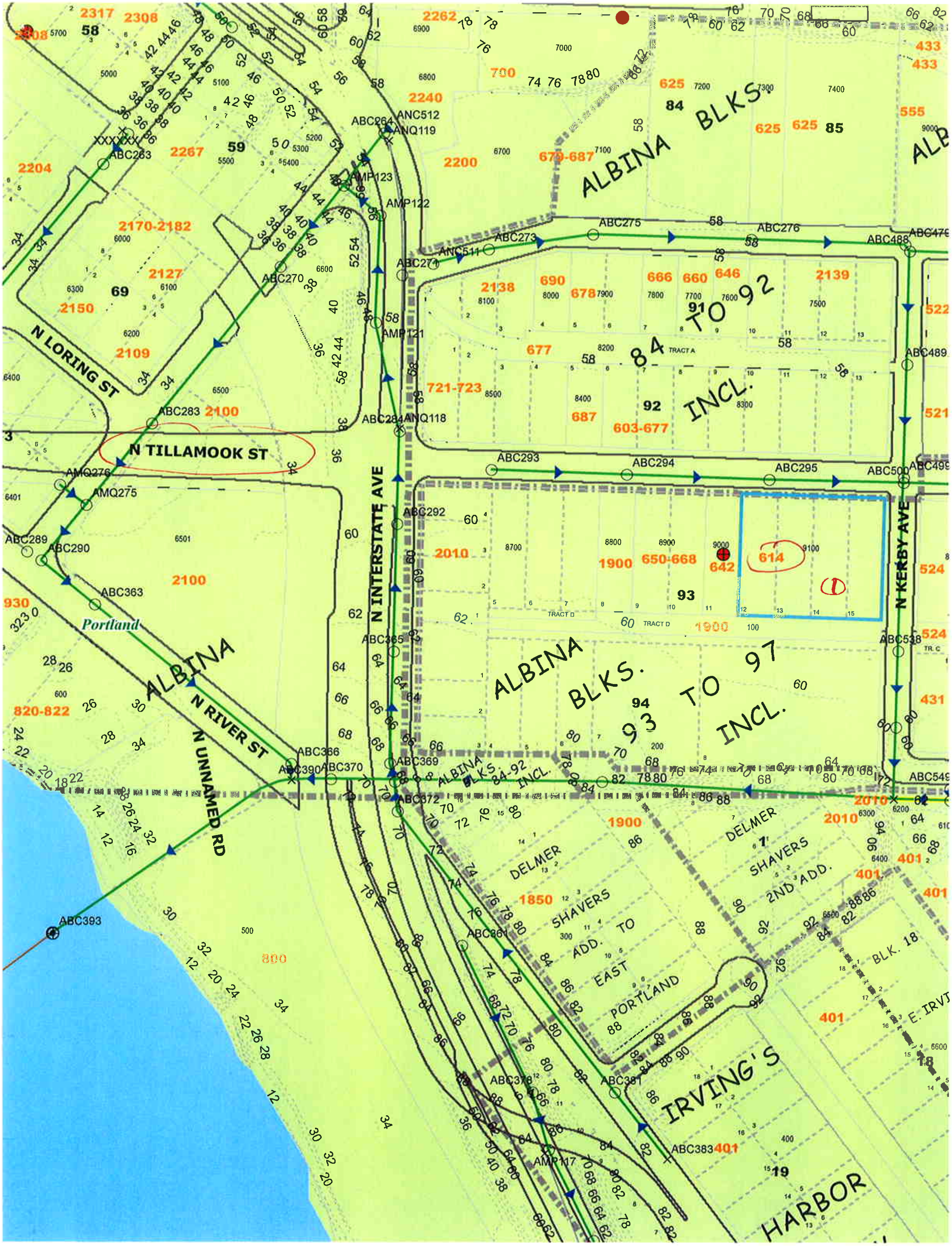
BOM Taps	1
Sanitary Sewer Length	199
Connection in Right of Way?	Yes
Connection Type	Storm

final app 6-12-03
Corrute. [illegible]

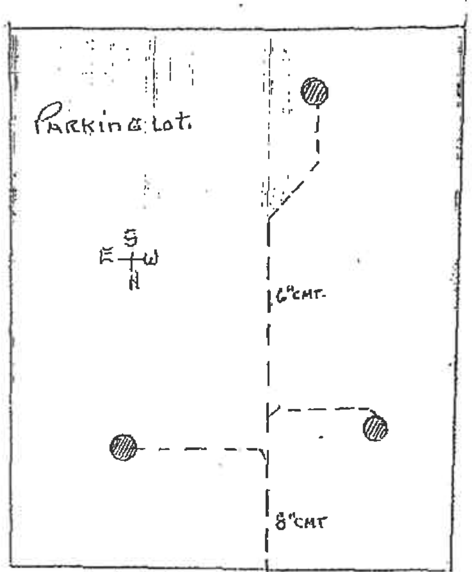


DEPARTMENT OF PUBLIC WORKS, CITY OF
SEWER CONNECTION MAP
STORM
STATE HIGHWAY
WAIVER
COMBINED STORM
R.P.C. WASTE WATER SEPARATION
SANITARY
COUNTY
EASEMENT
STOP
8"SAN
18'
3'D
4" Water main
Private Sewer
45° Bend
45° Bend
90° Bend
6½'D
Under RR Track
45° Bend
4"CIP
PRIVATE
SEWER 3'D
N

ATTACHMENT 2

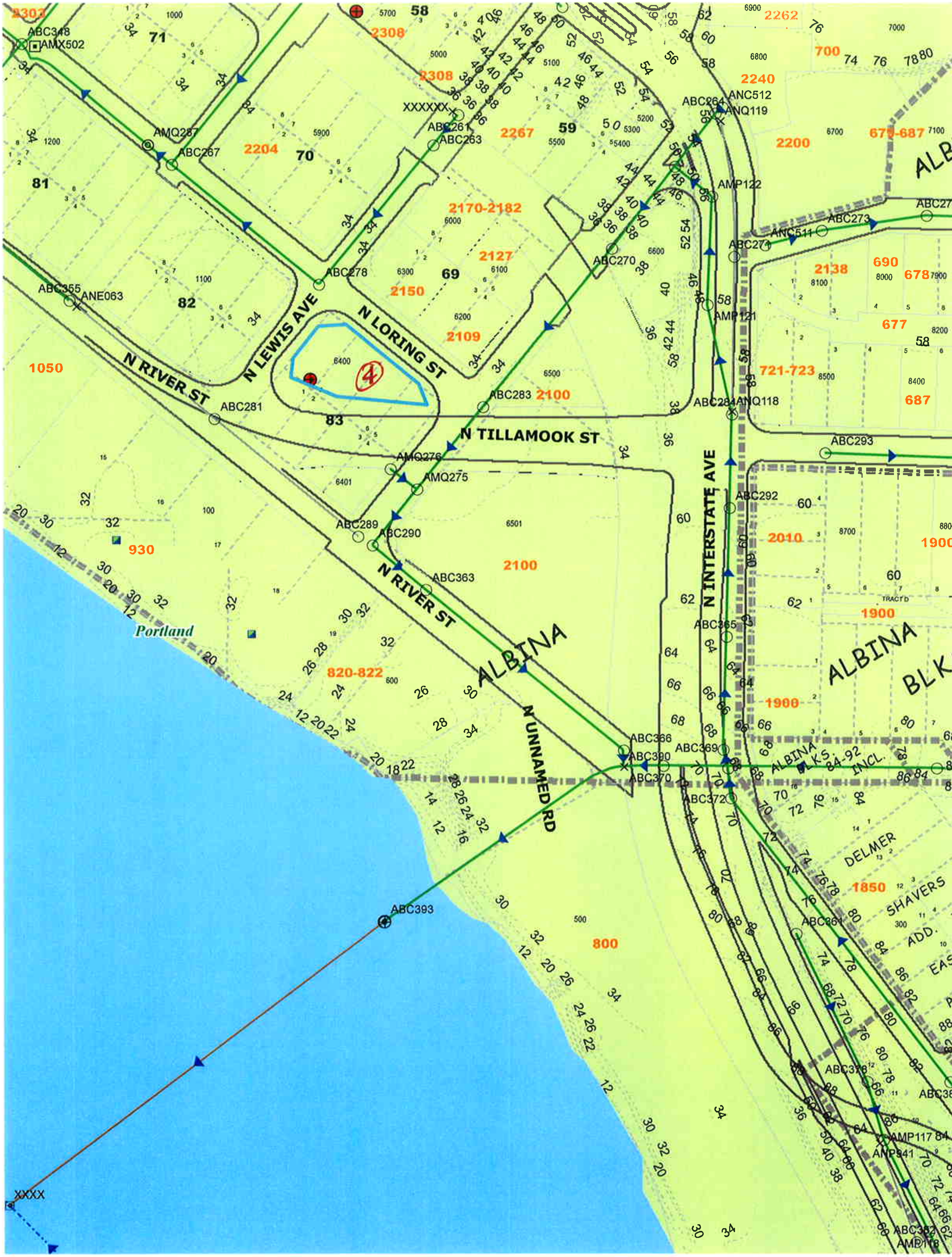


N TILLAMOOK ST
N LORING ST
N INTERSTATE AVE
N KERBY AVE
N RIVER ST
N UNNAMED RD
ALBINA BLKS. 84 TO 92 INCL.
ALBINA BLKS. 93 TO 97 INCL.
ALBINA BLKS. 84-92 INCL.
ALBINA
Portland
DELMER SHAVERS ADD. TO EAST PORTLAND
DELMER SHAVERS 2ND ADD.
IRVING'S HARBOR
BLK. 18
E. IRVI
614



#614 N. Tillamook St.

ATTACHMENT 3



N LEWIS AVE
N LORING ST
N RIVER ST
N TILLAMOOK ST
N INTERSTATE AVE
N RIVER ST
N UNNAMED RD
ALBINA
ALBINA BLKS
ALBINA BLKS. 84-92 INCL.
DELMER
SHAVERS ADD.
Portland
2303
2308
2308
2262
700
2240
2204
2267
2200
2170-2182
2127
2150
2138
690
678
2109
677
1050
2100
721-723
687
930
2100
2010
1900
1900
820-822
1900
1850
800
ABC348
AMX502
AMQ287
ABC267
ABC261
ABC263
ABC264
ANC512
ANQ119
AMP122
ANC511
ABC273
ABC275
ABC271
ABC270
ABC278
ABC355
ANE063
AMP121
ABC283
ABC284
ANQ118
ABC281
AMQ276
AMQ275
ABC293
ABC292
ABC289
ABC290
ABC363
ABC365
ABC366
ABC390
ABC369
ABC370
ABC372
ABC393
ABC361
ABC378
ABC381
AMP117
AMP841
ABC382
XXXXXX
XXXX

2829

FORM W 271-1
(4-69)

SANITARY ONLY SEWER

CITY OF PORTLAND, OREGON
DEPARTMENT OF PUBLIC WORKS
BUREAU OF DESIGN
SEWER BRANCH

Pmt. No. 88175

Date Nov. 26, 1969

Location 2110 N. Lewis Avenue

Between At N. River St.

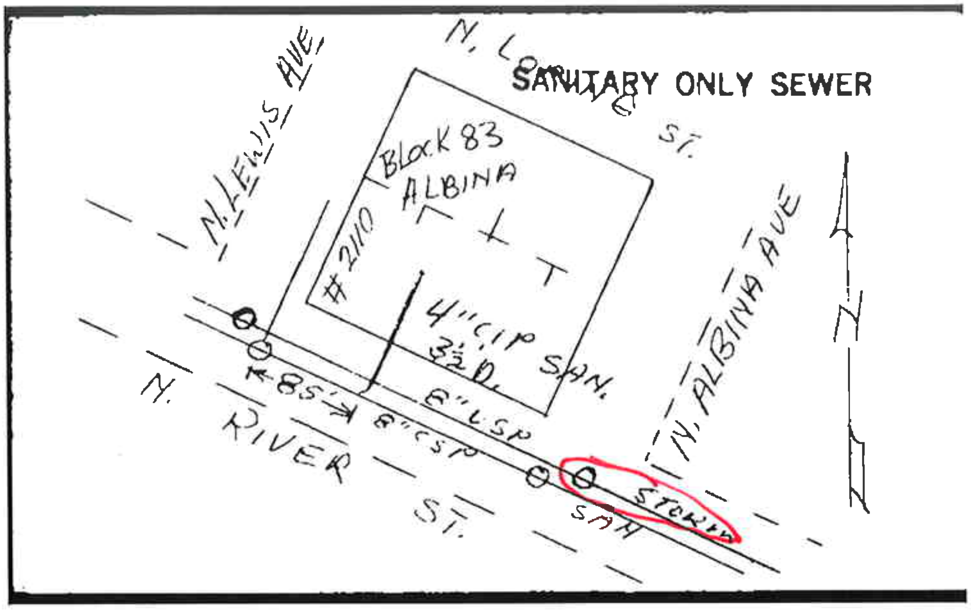
Addition Albina Lot All Blk. 83

Applicant Lord Bros. Waiver No ☐ Yes ☐ #

Remarks Separation of storm and San. Waste 4" CIP to Maint. installed branch at curb. 3½' deep at curb. 85 ft. southeasterly of M.H. at N. Lewis. Sanitary only.

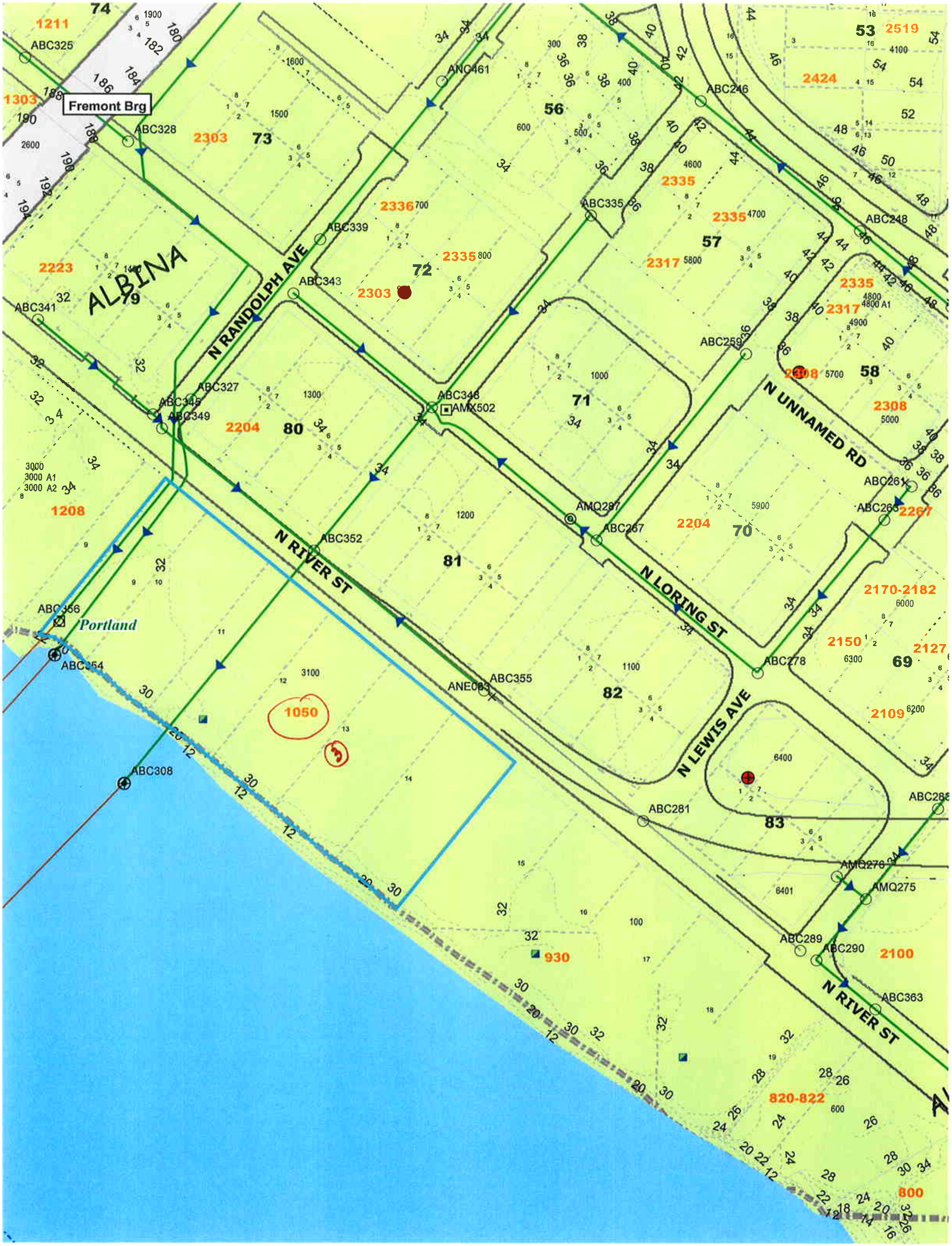
Inspected 12/3/69 19 By Brooks

Book 9 Page 18 New ✓ Repair



SANITARY ONLY SEWER
N. LEWIS AVE
Block 83
ALBINA
#2110
4" CIP SAN.
N. ALBINA AVE
N. RIVER ST.
85'
8" CSP
8" CSP
STORM
SAN
N

ATTACHMENT 4



Fremont Brg
ALBINA
Portland
N RANDOLPH AVE
N RIVER ST
N LORING ST
N LEWIS AVE
N UNNAMED RD
1050

Form W-89
(4-74)

BUREAU OF BUILDINGS
REPORT OF PLUMBING INSPECTION

Date 5/28/76

Address 1050 N. River St. Permit 0201089

Lot Blk Add

Owner Triad Const., 28725 Boones Ferry Rd., Wilsonville

Contractor Aqua Plumbing, Inc.

Stories and class of building new 1-story coast marine office & WH

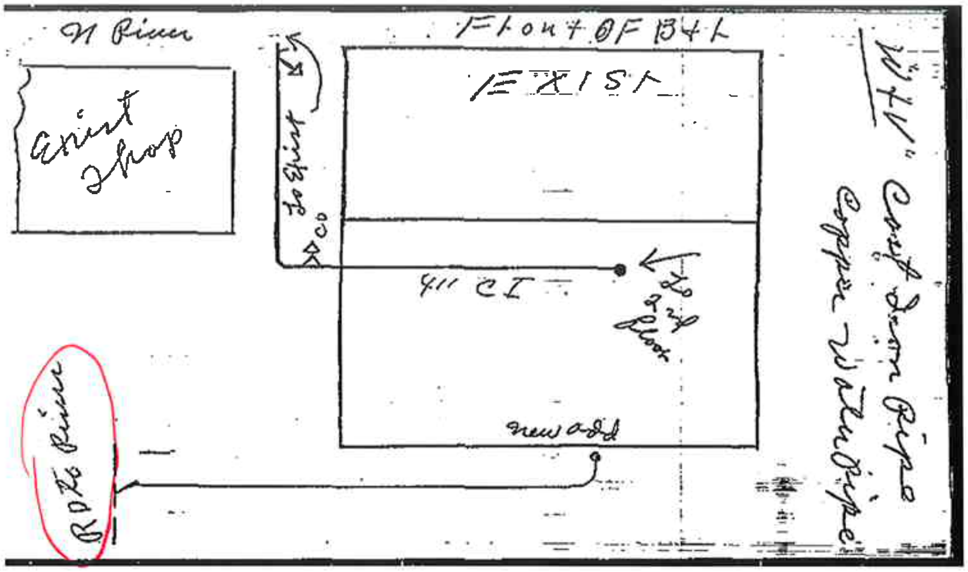
Water Closets	3N	Hot-Water Tank	2N	Cesspool	
Bath, Shower		Auto. Cl. Washer		Conn. Cesspool	
Bath Tub		Auto. Dishwasher		Dry Well	
Basins	4N	Drain Floor		Conn. Drywell	
Sinks	Ord 1N	Drain Area		Conn. Sewer	4"-200' 1N
Laundry Trays		Rain Drains	3N	Storm Sewer	4"-100' 1N
Bldg. Pmt.		Water Ser.	3/4" 1N	Catch-Basins	

Remarks 1N fountain; 1N sewer ejector; 3N hose bibbs

EASement Book (1) Page 14

Date of First Inspection 5-28-76 Date of Final Inspection 12-30-76

La Snow Inspector [signature] Inspector


N River
Front OF Bldg
EXIST
Exist Shop
To Exist CO
4" CI
new add
RPZ to River
4" Cast Iron Pipe
Copper Water Pipe

ATTACHMENT 5

(4-74) BUREAU OF BUILDINGS
REPORT OF PLUMBING INSPECTION

Date 11/2/81

Address 1303 N. River Permit 0813849

Lot ______ Blk ______ Add ______

Owner Northwest Copper

Contractor Ideal Plumbing

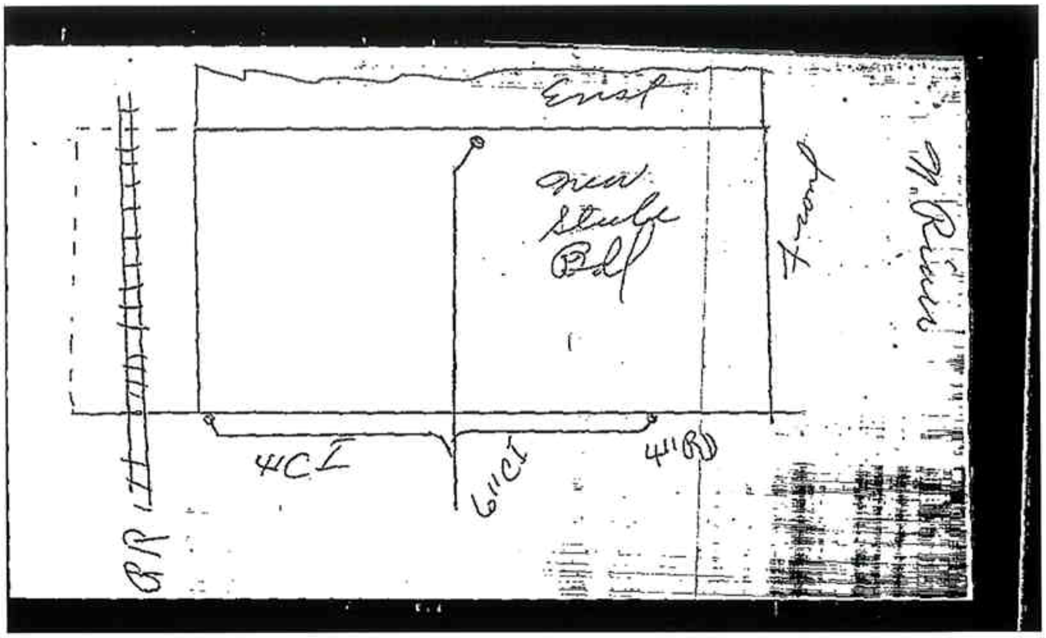
Stories and class of building old one story mfg

Water Closets		Hot-Water Tank		Cesspool	
Bath, Shower		Auto. Cl. Washer		Conn. Cesspool	
Bath Tub		Auto. Dishwasher		Dry Well	
Basins		Drain Floor		Conn. Drywell	
Sinks		Drain Area		Conn. Sewer	
Laundry Trays		Rain Drains	3N	Storm Sewer	
Bldg. Pmt.		Water Ser.		Catch-Basins	

Remarks fountains 1N Cert. Bd. Inspector

Date of First Inspection 10-28-81 Date of Final Inspection 1-28-82

[signature] Inspector ______ Inspector


East
new Stable Bld
Front
N. River
4"CI
6"CI
4"RD
RR

Form W-89 (6-74)

BUREAU OF BUILDINGS
REPORT OF PLUMBING INSPECTION

Date 1/31/79

Address 1303 N. River St. Permit 0215750

Lot ______ Blk ______ Add ______

Owner Northwest Copper, Same

Contractor Avery Plbg

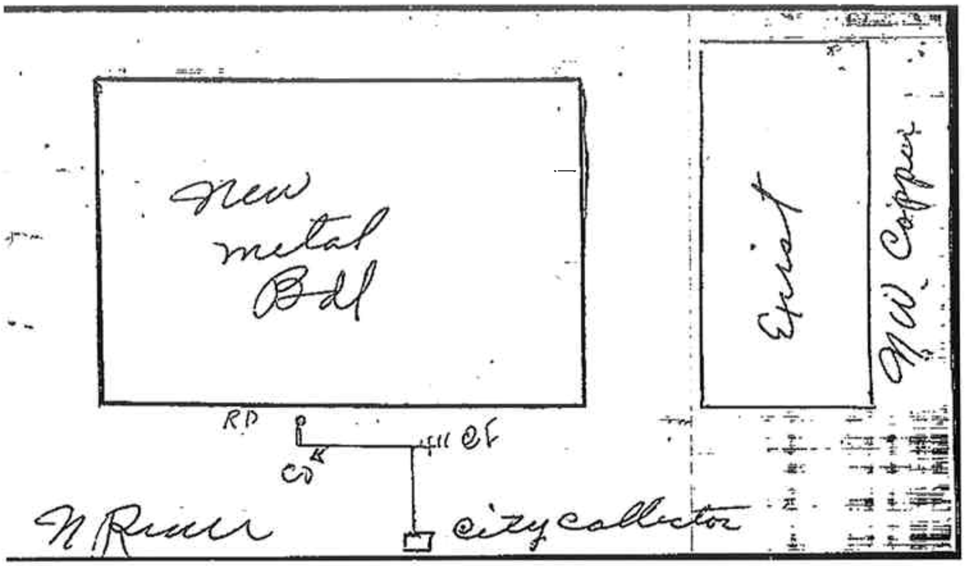
Stories and class of building new 1-story office

Water Closets ______	Hot-Water Tank ______	Cesspool ______
Bath, Shower ______	Auto. Cl. Washer ______	Conn. Cesspool ______
Bath Tub ______	Auto. Dishwasher ______	Dry Well ______
Basins ______	Drain Floor ______	Conn. Drywell ______
Sinks ______	Drain Area ______	Conn. Sewer ______
Laundry Trays ______	Rain Drains 1N	Storm Sewer ______
Bldg. Pmt. ______	Water Ser. ______	Catch-Basins ______

Remarks ______

Date of First Inspection ______ Date of Final Inspection 2-27-79

______ Inspector Moe Inspector


New metal Bdl
Exist
N.W. Copper
RD
CO
CF
N River
city collector

1303 N Russet St

BUREAU OF BUILDINGS
REPORT OF PLUMBING INSPECTION

Date 9-16-70

Address 2508 North Essex Street Permit 167603

Lot Blk Add

Owner Northwest Copper Company

Contractor D & F Plumbing

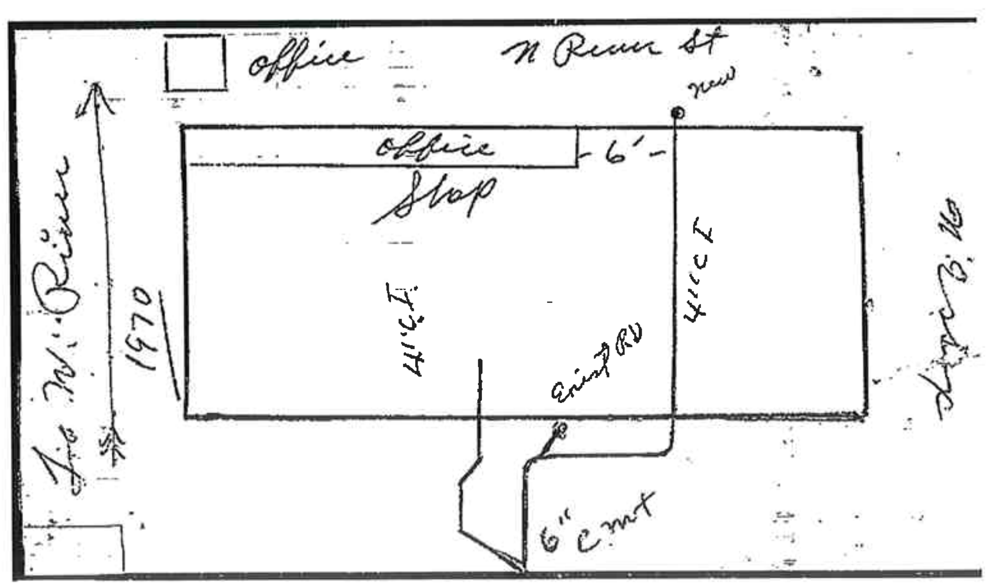
Stories and class of building

Water Closets	Hot-Water Tank	Cesspool
Bath, Shower	Auto. Clothes Washer	Septic Tank
Bath Tub	Auto. Dishwasher	Dry Well
Basins	Drain Floor	Water Service
Sinks	Drain Area	Connect to Sewer 1
Laundry Trays	Rain Drains 2	Cesspool, Septic Tank
Water Permit	Bldg. Pmt	Sewer Permit 89357

Remarks

Date of First Inspection 9-10-71 Date of Final Inspection 9-16-71

Inspector J. C. Angell Inspector


Office
Office
Shop
6'
1970

W-89
(661)

BUREAU OF BUILDINGS
REPORT OF PLUMBING INSPECTION

Date 11-8-67

Address 1303 North River Permit 150621

Lot Blk Add

Owner Northwest Copper

Contractor Dean Warren, Plumbing

Stories and class of building new 1 sty warehouse

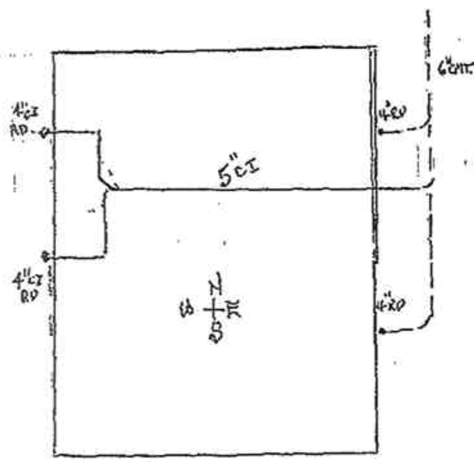
Water Closets	Hot-Water Tank	Cesspool
Bath, Shower	Auto. Clothes Washer	Septic Tank
Bath Tub	Auto. Dishwasher	Dry Well
Basins	Drain Floor	Water Service
Sinks	Drain Area	Connect to Sewer
Laundry Trays	Rain Drains 4	Cesspool, Septic Tank
Water Permit	Bldg. Pmt	Sewer Permit 85078

Remarks
11-15-67.

Date of First Inspection 11-3-67. Date of Final Inspection 1-15-68.

LPW. Inspector L.W. Watson Inspector

1968



#
1303 * 1285 N. River Street.

ATTACHMENT 6

Site Disc. [illegible]
Evaluate for addition to database as need for PA

Dave St. Louis
ECD

Dear Dave,

This note is the result of a recent conversation I had with John Odisio concerning the Siltec Silicon plant at Salem. Siltec is located on a portion of a demolished aluminum plant. At a meeting I had with Russ Gregoire of Siltec I was given a map of the old aluminum plant site. On the map, in the SW section, is located a dry well and is what I wish to bring to the attention of your division. If your division has some method of cataloging these sites this may be useful.

Also, in the course of a phone conversation, a site with potential PCB contamination has been brought to my attention. In inner NE Portland at 614 NE Tillamook is an old warehouse that was used at one time by the Westinghouse Company. This person reported that he had done some repair and remodeling work in this warehouse where electric transformers were stored. At the time he was working in the warehouse there was a large sump in the middle of the floor that oil from the transformers was poured. I would guess that there would be the potential for some of this oil to contain PCB's. This site may be of some interest to your section if it is not already known.

If you need any additional information please contact me at -6280.

Matt

Matt Wilkening
Asbestos cop

Department of Environmental Quality
RECEIVED
SEP 28 1988
Environmental Cleanup Division

9/28/88

ATTACHMENT 7

WAGGY Janelle

From: WISTAR Gil
Sent: Monday, June 10, 2002 5:11 PM
To: PUENT Sally
Cc: WAGGY Janelle
Subject: FW: Former Westinghouse Transformer Site

FYI, Sally - Bill should have copied you on this e-mail.

-----Original Message-----
From: DANA Bill
Sent: Monday, June 10, 2002 5:01 PM
To: FORTUNA Steve
Cc: DANA Kevin; WISTAR Gil
Subject: Former Westinghouse Transformer Site

Steve, I received a call today from Dr. Tom Munson, a chemistry prof at Concordia University. He used to work for Westinghouse and called to report a former Westinghouse transformer repair facility in north Portland. He recently testified in a case against Westinghouse and came into possession of a document listing the locations of former Westinghouse facilities. He said he understood that PCBs have been found in the Willamette River sediment downstream (north) of the Broadway Bridge, and he thought that this facility could be a potential source of that contamination. He said that some of the former Westinghouse facilities have been big sources of PCB problems. He noted that Westinghouse is now owned by Viacom.

The site is located in the 600 block of North Tillamook. Dr. Munson didn't have the document at hand when he called, but he thinks the address is 625 N. Tillamook. The exact address is listed in the document. He is going out of town in a few days, I believe for the entire summer, but he said he would look up the exact address when he returns, if needed.

Dr. Munson said that, typically, the repair facilities had an open yard where transformers were stored. He says he has driven by the 600 block of N. Tillamook and there is a property with such a yard. He said he believes the property is currently owned or operated by the County.

I had Kevin check the Confirmed Release List and he found a facility called Master Chemical at 642 N. Tillamook. It's been NFA'd. There is no record of the Westinghouse facility.

Could you give Dr. Munson a call at (503) 493-6205 and let him know how and when you might be able to look into this. I didn't promise him anything, but I think we should let him know that his call has been referred to Site Assessment and what that means. Thanks.

Bill

Bill Dana, Coordinator
Orphan & Site Response Programs
Land Quality Division
Oregon Dept. of Environmental Quality
(503) 299-6530

WAGGY Janelle

From: PUENT Sally
Sent: Wednesday, July 03, 2002 4:00 PM
To: FORTUNA Steve
Cc: WAGGY Janelle
Subject: RE: Former Westinghouse Transformer Site

Thanks. I'll cc Janelle so she can get the info from you and get the site in ECSI

-----Original Message-----
From: FORTUNA Steve
Sent: Wednesday, July 03, 2002 3:37 PM
To: PUENT Sally
Cc: FORTUNA Steve
Subject: RE: Former Westinghouse Transformer Site

Sally,

We need to follow-up at some point. At minimum, we should add the site (or sites) to ECSI.

I'm not overly enthusiastic about the sites at this point because I suspect it will take a lot of digging to justify calling the site(s) a high priority. River sediment data showing PCBs (USACE may have historic sediment data) would be very important for the site(s), but not conclusive. I don't know that the site(s) would necessarily still represent a substantial threat to the river since the site(s) have subsequently been paved (PCB aren't going to be very mobile if the site is capped; groundwater is probably too deep; no contaminated surface runoff is anticipated). However, city storm sewers could still contain residual PCBs.

We will certainly have to first review Dr. Munson's file material before aggressively pursuing the sites.

smf

-----Original Message-----
From: PUENT Sally
Sent: Wednesday, July 03, 2002 3:20 PM
To: FORTUNA Steve
Subject: RE: Former Westinghouse Transformer Site

Are you planning to do an SR on this one?

-----Original Message-----
From: FORTUNA Steve
Sent: Thursday, June 13, 2002 5:05 PM
To: PUENT Sally
Cc: BLAKEMAN Christopher; HARMAN Charles; FORTUNA Steve; DANA Bill
Subject: FW: Former Westinghouse Transformer Site

I just spoke with Dr. Tom Munson regarding the former Westinghouse transformer repair facility at N Tillamook Street and N Kirby Avenue in Portland. The site shares its western property line with the Master Chemical site (ECSI #1302) which I NFA's in August 1995. Dr. Munson is leaving on vacation, but will return August 1, and will provide us with documents at that time (he has an estimated 5-inch thick stack of documents regarding Westinghouse PCB policies / philosophy during the early 1970's).

Dr. Munson is a former Westinghouse employee, and a witness against Westinghouse's former Minnesota operations (PCB spill related).

It was a fascinating discussion. Dr. Munson was in Westinghouse R&D in the early 1970's, and participated in an internal corporate study of the company's PCB handling practices and potential environmental consequences. His quick synopsis was that the initial information about the company's PCB handling practices so frightened Westinghouse that the company stopped any further studies and quickly sold their PCB-associated properties. Dr. Munson personally presented his study findings to the Westinghouse CEO, and also later testified in early Congressional hearings about environmental significance of PCBs (early-to-mid-1970's).

The N Tillamook Street /Kirby Avenue property is currently owned by Portland Bureau of Water Works. A Sanborn fire insurance map from 1950 indicates that warehouse buildings occupied 90-percent of the site, except for a small (60 ft x 50 ft) outdoor storage area at the southwest corner of the site, and a 12-foot wide access road from the storage area to Tillamook Street. Aerial photos indicate that about 40-percent of the original warehouse structures have subsequently been removed, and the site is currently covered by either buildings or blacktop parking lot.

Capping of the site suggests that potential threats have probably been reduced. But the site lies very near Tubman Middle School and Lillis-Albina city (neighborhood) park; Emanuel Hospital is located 4-5 blocks to the north. There could be significant threat to utility trench workers or future construction workers (the warehouses were constructed in 1924, and might likely be replaced at some time in the near future).

Dr. Munson states that, at the time (early 1970's), Westinghouse considered transformer fluids no different (no more toxic) than waste oil, and likely would have used it in the same manner that waste oil was typically used at the time (e.g., dust suppression on unpaved roads, burner fuel, etc.). His concern that the site may have contributed to PCBs detected in Willamette River sediments may be real. Stormwater sewers at the site feed City Stormwater Outfall #43, about 2 blocks from the site (midway between the Freemont and Broadway Bridges).

The site is located within an Economic Justice area (SAS Vulnerable area),, and the Lower Willamette has T&E fish migration habitat, so the sight might be considered a high priority for follow-up.

It might also be worth noting that Dr. Munson evidently also has records of a 2,000 lb PCB shipment by Westinghouse to Rainier, OR.

And historic DEQ records also describe a former Westinghouse property at N Ramsey Blvd and N Lombard in 1978 (Now owned by Eastern Electric Apparatus Repair Co., the business successor of Westinghouse). The Ramsey Blvd site is located 1/2 mile north of the St. Johns - Keeler #2 Right of Way site, where PCBs [6 ppm] and Petroleum Hydrocarbons [33,000 ppm] of unknown origin have been detected in soils to at least 15 feet bgs. EPA took legal action against Eastern Electric's St.Louis operations in 1993 for illegal PCB disposal to a sump.

Westinghouse was a major illegal disposer of PCBs in Indiana. Eastern Electric has also been implicated in major illegal PCB disposals in Indiana.

smf

ATTACHMENT 8

JAN 2 2003

December 31, 2002

Steve Fortuna
Oregon Department of Environmental Quality
North West Region
2020 SW 4th Avenue
Portland, OR 97201-4987

Dear Mr. Fortuna: Sorry it has taken me so long to get back to this task, but teaching comes in waves with only small breathers in between. Enclosed please find two sets of documents.

One set consists of Monsanto documents which show sales of PCB-containing products to Westinghouse Electric facilities for the period 1971 through 1975. I have only enclosed the pages showing sales in Oregon. I believe that these records indicate sales of PCB transformer fluid to three different facilities in Oregon: the repair shop on Tillamook (customer # 00332178); a facility in Rainier, OR (customer # 00301612); and the WE Power Systems Field Sales Office, 5901 SW Macadam Ave, Portland OR (customer # 10089123). I haven't been able to decipher whether the numbers supplied are thousands of pounds of fluid or thousands of dollars of sales, but either way, one can get an idea of how much fluid was probably involved since, at that time, a pound of the fluid cost less than one dollar.

The other set of documents I enclosed for your possible interest because it supplied the address of the sales office mentioned above. In addition, these letters deal with a problem that had surfaced at that time. Apparently a considerable number of transformers made by Westinghouse which were supposed to contain only mineral oil had in fact contained substantial quantities of PCB-fluid. The only way to be sure what fluid the transformers contained was to use chemical tests.

If I can be of any further help, just let me know.

Sincerely,

Tom

Tom Munson, Ph.D., Associate Professor of Chemistry
Concordia University
2811 NE Holman Street
Portland, OR 97211
(503) 4936205
email: tmunson@cu-portland.edu

Enclosures

ATTACHMENT 9

WQ - PCB

PRO
SNOW

Westinghouse Electric Corporation

Industry Products Company

Apparatus Service Division

614 North Tillamook Street
Portland Oregon 97227

Department of Environmental Quality
1234 S.W. Morrison Street
Portland, Oregon 97205

Attention: Charles K. Ashbaker

Dear Mr. Ashbaker:

This is in answer to your letter of April 12, 1976 which outlined your recommendations resulting from the PCB Survey conducted on January 28, 1976 at the Westinghouse Portland Apparatus Service Plant.

Attached is the "National Pollutant Discharge Elimination System Application For Permit to Discharge" (Short Form D) and a facility layout showing those areas where PCB's are handled and stored.

We do maintain a program to contain PCB's in order to prevent contamination of surface runoff. It includes instructions for handling, installation and maintenance of electrical apparatus, procedures for handling in-transit leaks and spills, disposal of liquid and solid wastes through EPA approved disposition service companies, and safety precautions for employee awareness.

Also attached is our Spill Prevention and Countermeasure Control Plan.

Sincerely,

R. C. Kuhnert

R. C. KUHNERT, Manager
Portland Apparatus Service Plant

RK/gh

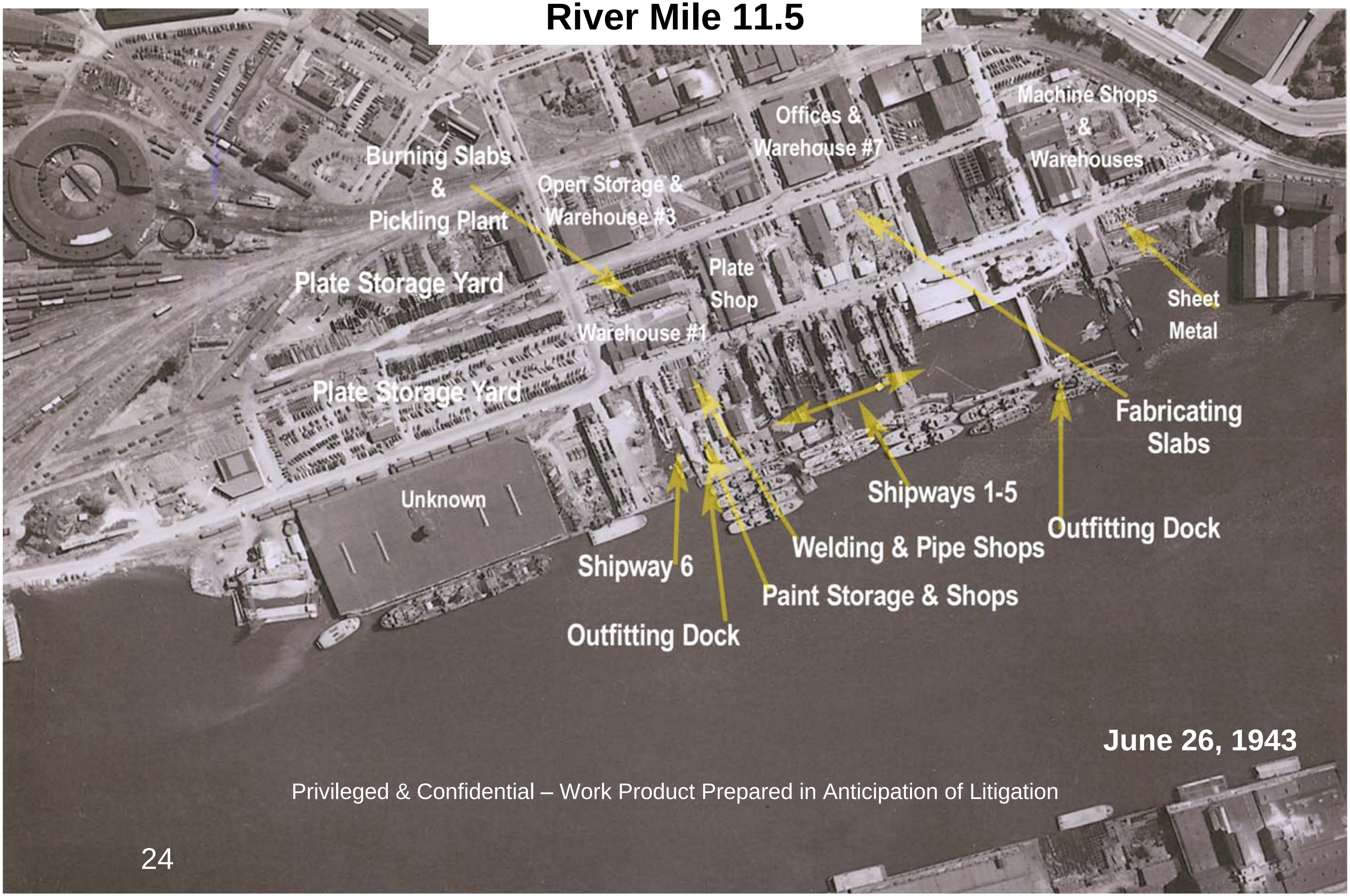
enc

PHOTO 1

ALBINA SITE FEATURES

Albina Site Features

River Mile 11.5



MEMORANDUM

SANDERS (2007)

MEMORANDUM

Backup information for Eliot Riverside CSM

CONFIDENTIAL: Attorney-Client Privileged. Prepared in Anticipation of Litigation

TO: Integral

FROM: Dawn Sanders, City of Portland

DATE: September 28, 2007

The following is a compilation of information used to comment on the LWG Eliot Riverside CSM. One of the issues we noted in reviewing plumbing records and other materials is that addresses have changed overtime (or even for the same time period but different operators) for a given property. Therefore, the information was organized by Block Numbers, which appears to be consistent over time in the plumbing records. The exception to this is the riverfront properties, which do not have block designations. For these, the Albina River lot numbers were used. The figure at the end of this document shows the various designations for each property.

Sources of historical information for the properties of interest included plumbing records, the Polk Directory from 1940-2000 and Sanborn maps from 1924 and the date range 1924-1950. According to the Sanborn map database accessed through Multnomah County's library website (http://0-sanborn.umi.com.catalog.multcolib.org/HelpFiles/info.html), date ranges:

"indicate the date the mapmakers began work on the map and the date of completion. In later years the Sanborn Company issued revisions that were intended to be literally pasted over the original map sheet. In these cases the last date refers to the date of the most recent pasted correction".

Despite the explanation of date ranges by the Sanborn company, it's not clear from the 1924-1950 maps when block level revisions occurred. These maps are therefore referred to as the 1924-1950 Sanborn maps throughout this document with the disclaimer that revisions could have occurred at anytime within this date range.

For clarity, several abbreviations used throughout this document are:

CPD = Commission of Public Docks
Ind SW = BES Industrial Stormwater permit files
PDOT = Portland Office of Transportation

Tucker Building Property

All addresses appear to correspond to the same block #83, with 8 lots in the block. Lot #s are listed with plumbing records when provided.

<table>
<tr><th>Address</th><th>Plumbing Records</th><th>Polk Directory</th><th>Sanborn Maps</th></tr>
<tr><td>934 N. River St.</td><td></td><td>1940-NW Electric Co. warehouse
1950-Pacific Power and Light (PPL) Co. warehouse
1960-PPL manufacturers
1970-PPL warehouse
1980-PPL warehouse
1990-address not found
2000-address not found</td><td rowspan="5">1924:
-Northwest Sales Co. Camp Equipment
-Electric Supplies Store
-Northwestern Elec. Co. (Transformers)

1924-1950:
-Pacific Power & Light Co.
-Repair Shop
-Open Air Transformer Station
-Northwestern Elec. Co. (Transformers)</td></tr>
<tr><td>951 N. River St.</td><td>1925-Railroad shop, lots 1 and 2 (owner?)</td><td></td></tr>
<tr><td>460 River St.</td><td>1925-Argus Products Co., Railroad shop on lots 1 and 2</td><td></td></tr>
<tr><td>2110 N. Lewis Ave.</td><td>1948-Milbrandt Construction
1968-PG & E
1975-PPL</td><td rowspan="2">1940-NW Electric Co.
1950-PPL NW Division
1960-PPL (district operation headquarters)
1970-PPL storeroom/overhead distribution
1980-same as 1970
1990-address not found
2000-address not found</td></tr>
<tr><td>2120-2126 N. Lewis Ave.</td><td>1913-NW Electric Co.
1918-NW Electric Co., lots 3 and 4
1926-NW Electric Co., lots 1,2,7 and 8
1977-PPL</td></tr>
</table>

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Pacific Power and Light (PP&L)

PP&L operated or owned a number of properties in the Eliot Riverside area. The Polk Directory does not show any business listed and a number of the properties so it is difficult to know the length of time PP&L operated there (for example, see 981 N River in the Polk directory table). Plumbing records and Sanborn maps were also reviewed to help determine length of operation.

Block #	PPL Structure (from Polk)	Year (s) identified in Polk	Address identified in Polk	Supporting documentation
69	Albina Station	1960-1970	901 N. Loring	Address matches up with 1924-1950 Sanborn for this block.
	Garage	1950-1980	2170 N. Lewis	Private garage indicated at this address on 1924-1950 Sanborn.
*71 (see note below)	NA			Current county tax assessor records show that PP&L owns this property. 1924-1950 Sanborn shows a "transformer stand" which doesn't appear on 1948 aerial but subsequent aerials starting in the 1960s up to the present show transformers on this site.
78 & 79	Construction department	1970-1980	2223 N. Randolph	Plumbing records for PPL at this site span 1958-1991, including rain drains connected to storm inlet in 1958 for new electrical storage and warehouse. Rain drains were replaced in 1980 for structure labeled "construction building". Comparison of 1960s and 1948 historical aerial confirmed new building construction. 1971 building appeal involving "construction of a repair garage at N. Randolph between Loring and River".
80	Construction department	1950	2110 N. Randolph	Even address numbers for this block per 1924-1950 Sanborn. 1964 and 1966 plumbing records for capping sewer at old PPL warehouse on this block. Comparison of 1975 and 1960s historical aerials shows demo of several buildings on this block.
	Warehouse	1960	1131 N. River	Addresses make sense per 1924-

Block #	PPL Structure (from Polk)	Year (s) identified in Polk	Address identified in Polk	Supporting documentation
			1133 N. River	1950 Sanborn. See 1964 and 1966 plumbing records for Randolph address and 1975 and 1960s historical aerials show demo of several buildings on this block.
81	Substation	1950	2103 N. Clark	1924-1950 Sanborn map shows a transformer yard and control house; 1949 plumbing records for PPL control house (rain drain)
		1960	981 N. River	1924-1950 Sanborn map has 981 N. River address; see 1960s aerial showing substation.
		1970-1980	1050 N. Loring	This address makes sense per 1924-1950 Sanborn map, which lists 1038 N. Loring with block 81; 1975 aerial shows substation and new buildings at north and east ends of block.
82	NA	NA		Current county tax assessor records show that PP&L owns this property. A 1949 plumbing record for 933 N River lists both Blocks 81 and 82.
83	NW Division	1950	2110-26 N. Lewis	1924-1950 Sanborn map shows PPL warehouse.
	Portland district operations Hqs	1960		
	Store room, overhead distr	1970-1980		1975 and 1977 plumbing records for PPL, including 1977 catch basin connection to “city collector”.
	Warehouse	1950-1980	934 N. River	1924-1950 Sanborn map; 1975 and 1977 plumbing records.

*No plumbing records or as-built connections for block 71. However, a 1985 TV survey of the storm line along N. Harding between Railroad Ave. (now “Unnamed Rd”) and N. Loring Ave. shows a lateral connected to the block 71 property. It is unknown if this is active or was in the past.

Albina Engine and Machine Works Inc.

Riverfront parcels associated with Albina Engine are included in the Historical Riverfront Activities section that follows. The following addresses only non-riverfront propreties

Taxlot 25

The following addresses are part of taxlot 25, section 27, which is the block southeast of the Tucker Building property. This property doesn't have a block number. Taxlot 25 was also bisected by the PDOT Interstate on-ramp. 1924-1950 Sanborn shows this block was occupied by various operations of Albina Engine and covered the addresses of 2000-2050 N. Albina Ave.

2100 N. Albina isn't listed on the 1924-1950 Sanborn but would fall in this block as well, based on the addresses listed for the adjacent block. Albina Engine is associated with two of these addresses in the Polk Directory:

Property	Address identified in Polk	Year (s) identified in Polk	Supporting documentation
Taxlot 25	2038 N. Albina	1940	1942 plumbing record for Albina Engine (connection to storm) and 1969 record (floor drain). Location of new warehouse on 1947 plumbing record matches up with 1924-1950 Sanborn.
	2100 N. Albina	1950-1970	1953 plumbing record for Albina (rain drains). Plumbing records for 1956, 1964, 1969 and 1973.
	2000 N. Albina	Not listed	Two plumbing records from 1941 for this property, one for sanitary connection for Albina Engine and the other for a storm connection with no owner listed.

Other Albina Engine Properties

All the plumbing records cited the name Albina Engine (in some form) on the card.

Block #	Address	Supporting documentation
Not listed	2224 N. Albina	1968 plumbing record with catch basin connection, but the 1924-1950 Sanborn shows this property as a Vinegar and Cider Works facility. Unclear if Albina was actually operating here.
70	961 N. Loring St.	1944 plumbing record with sanitary connections for old warehouse.
80	460 River St.	1917 plumbing record for 1 story frame machine shop.
82	460 River St. 2103 N. Clark/ 1130 N. Loring	1917 plumbing records with sanitary connections for 2 story frame shop. 1924 Sanborn has Albina Marine Iron Works steel shop at this block. 1941 plumbing record with sanitary connections for rest room.
Not listed	820 N. River	1948 and 1969 plumbing records with floor and rain drains.

Historical Riverfront Activities

Albina River Lots

These lots are labeled in the Tax Records as "Albina River" lots and have designated Lot numbers.

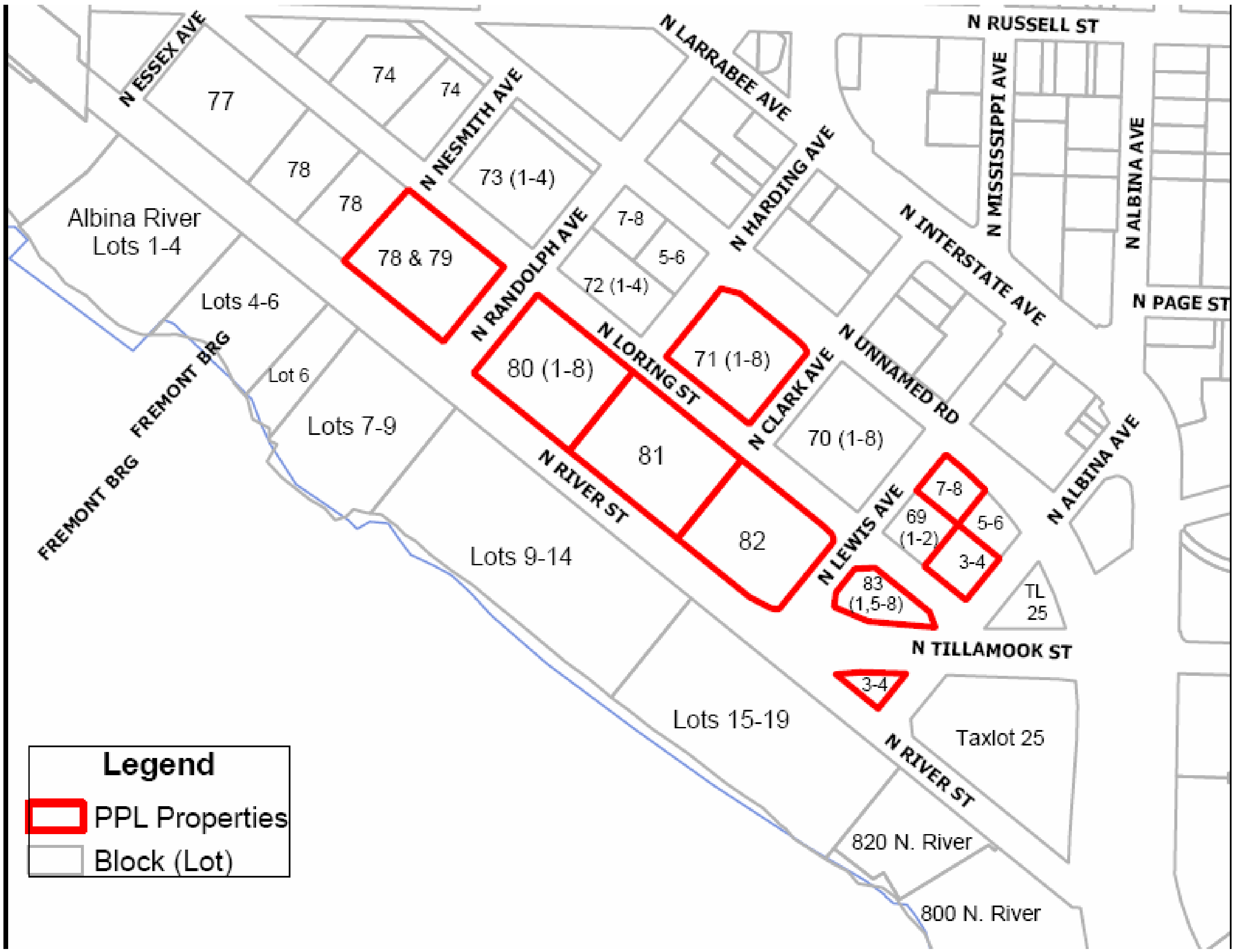
Albina River Lot #	Address	Company (activities)	Date of Operation (Source)
1-6	1300 N. River St.	Montgomery Dock No. 2 (grain shipping)	At least 1919 (CPD map) - at least 1924-1950 (Sanborn)
	1220 N. River	Leickenbach/Luckenbach Steamship Co. [Lessee] (general cargo)	At least 1924 (CPD and Sanborn maps) - Less than 1960 (Polk)
	1300 N. River	Columbia Basin Terminal 2	About 1960 - Less than 1970 (Polk)
	1300 N. River	McDonald Dock Co.	At least 1973 (plumbing record) - Less than 1980 (Polk). Note: listed as vacant dock in 1970 Polk
1-4	1300 N. River	Willamette Dock (storage rental)	1999 (Ind. SW Survey)
4--6	N River	Leased by State of Oregon (I-405/Fremont Bridge)	About 1970- current
7-9	1208 N. River	Star Sand Co. (sand and gravel storage)	At least 1919 (CPD map) - Less than 1960 (Polk)
		Ross Island Sand & Gravel-Albina Facility (ready mix batch plant)	At least 1951 (plumbing record) - At least 1996 (Ind. SW Survey) [Note: Pamplin, owner of RISG, still owns property per Multnomah County tax assessor records]
		K.F. Jacobsen Co. (asphalt manufacturing)	At least 1960 - At least 2000 (Polk)
9-14	1050 N. River	Albina Engine and Machine Works (shipyard)	At least 1919 (CPD map) – at least 1943 (Albina Site Feature map)
		Coast Marine Construction Inc (boat building)	At least 1976 (plumbing record) - Less than 2000 (Polk)

Albina River Lot #	Address	Company (activities)	Date of Operation (Source)
		Lone Star Sand and Gravel, Lone Star NW Inc., Glacier NW Inc.	At least 1997 (plumbing record) - Present
15-19	931 N. River (Now 930 N. River)	Albina Engine and Machine Works (shipyard)	At least 1919 (CPD map) - At least 1943 (Albina Site Feature map)
		Santa Cruz Portland Cement Co. (cement manufacturing)	At least 1934 (plumbing records) - Less than 1960 (Polk)
		Permanente Cement Co.	At least 1950 (Polk) - Less than 1970 (Polk)
		Kaiser Cement & Gypsum Corp.	At least 1970 (Polk) - Less than 1990 (Polk)
		Lone Star NW	At least 1987 (plumbing record) - Less than 2000 (Polk)
	922 N. River	Portland Fire Boat #2	At least 1923 (plumbing record) - Less than 1970 (Polk)

Other Riverfront Properties

These properties do not have Block or River lot numbers in the Tax Records (just a section numbers).

Address	Company (Activities)	Dates of Operation (Source)
800 N. River	Irving Dock (Grain shipping)	At least 1919 (CPD map) - Less than 1960 (Polk)
	Balfour-Guthrie Company (Grain warehouse)	At least 1924 (Sanborn) - Less than 1960 (Polk)
	Interior Warehouse Co.	At least 1940 (Polk) - Less than 1970 (Polk)
	Oregon Bonded Grain Warehouse	At least 1940 (Polk) - Less than 1960 (Polk)
	Peavey Co. Grain Elevator	At least 1970 (Polk) - Less than 1980 (Polk)
	Bunge Corp Grain Elevator	At least 1976 (plumbing) - 1997 (Ind. SW Survey)
	Oregon Electric Constr.	At least 2000 (Polk) - ?
	Cargill Inc Irving CLD Pacific Grain LLC	1997 (Ind. SW) - 2002 (Ind. SW) 2002 (Ind. SW) - present
820 N. River	Portland Fire Boat #2	At least 1923 (plumbing record) - Less than 1970 (Polk)
	Marine Repair and Construction Co.	At least 1924 (CPD map)
	Albina Engine and Machine Warehouse (shipbuilding)	At least 1948 for new office (plumbing) - At least 1969 for same office (plumbing)
	Stuart J Mason, engineer	At least 1940 (Polk) - ?
	Fabri-valve & Manufacturing Co.	At least 1980 (Polk) - Less than 1990 (Polk)
	Misc. businesses	See 1990 and 2000 Polk listings


N ESSEX AVE
N NESMITH AVE
N LARRABEE AVE
N RUSSELL ST
N MISSISSIPPI AVE
N ALBINA AVE
N PAGE ST
N HARDING AVE
N INTERSTATE AVE
N RANDOLPH AVE
N LORING ST
N UNNAMED RD
N CLARK AVE
N RIVER ST
N LEWIS AVE
N TILLAMOOK ST
FREMONT BRG
77
74
74
78
78
73 (1-4)
78 & 79
7-8
5-6
72 (1-4)
Albina River
Lots 1-4
Lots 4-6
Lot 6
Lots 7-9
80 (1-8)
71 (1-8)
81
70 (1-8)
82
7-8
69
(1-2)
5-6
3-4
83
(1,5-8)
TL
25
3-4
Lots 9-14
Lots 15-19
Taxlot 25
820 N. River
800 N. River
Legend
PPL Properties
Block (Lot)